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An Address
ON
THE DRUG HABIT.

Delivered at a Meeting of the Pharmaceutical Society,
by
Professor W. E. DIXON, M.D., F.R.S.

The food customs of mankind should not be regarded as random practices adopted to please the palate, or to gratify an idle and vicious appetite. They are more probably the result of experience and instinct which supply important wants in the animal economy. The natives in many different countries of the world use herbs containing caffeine or one of its allies in the form of a decoction or infusion, although such herbs possess neither characteristic taste or smell. Caffeine is obtained most readily from tea, which may contain anything from 3 to 5 per cent.; other plants are coffee from Arabia containing caffeine, cocoa from South America containing theobromine, kola from Central Africa containing both caffeine and theobromine, guarana paste from Brazil, Paraguay tea from the Argentine, and there are many others.

Stimulants in some form would appear to be even more essential to the exigencies of life under modern civilization. Caffeine, which is universal, is a powerful cerebral stimulant, but its action in banishing sleep and its effect on the heart effectually prevent it from being taken in excessive doses. Chronic poisoning by tea and coffee is not very uncommon and may occur when six or seven grains of caffeine are taken daily. The sufferer is tremulous, shows loss of self-control, and exhibits fits of excitement and depression; he has a haggard appearance and loses his colour. Cardiac symptoms are often first noticed. A renewed dose of the poison gives temporary relief. Such patients abandon their tea or coffee without much difficulty when they are assured that it is the cause of their trouble, and a true "craving" never exists.

Tobacco.

Tobacco smoking is universal; the following table gives the composition of the smoke from the cigarette and the opium pipe:

Analysis of Tobacco and Opium Smoke in Conditions approximating to those which occur in Smoking.

	100 grams tobacco burnt as cigarettes.	100 grams dross opium containing 7.35% morphine.
HCN	0.080	0.010
Pyridine	0.146	0.147
Nicotine	1.165	—
NH_3	0.360	0.395
CO	410 c.cm.	0
Morphine	—	0.016

Chandoo opium smoke contains 0.1% morphine.

Ordinary Virginian tobacco from which cigarettes are made contains weight for weight nearly twice as much nicotine as Manila cigar tobacco. But when these two are burnt during smoking the smoke from the cigar contains more than twice the amount of nicotine in that from the cigarette. During the slow combustion of a cigar, as in ordinary smoking, immediately behind the lit end is an area in which the water and other volatile substances in the tobacco condense; during the act of smoking, a large portion of the nicotine at the seat of combustion is destroyed (50 per cent.), and the nicotine which finds its way into the mouth of the smoker is derived from the hot gases passing through this hot moist area in which the rest of the nicotine has condensed. The smaller the moist area behind the point of combustion, the less likely is the smoke to contain volatile toxic bodies. A thin cigar or a cigarette will yield fewer of these products than a thick cigar, for the thin cigar or cigarette obviously permits a relatively greater cooling.

The nicotine from the smoke of one cigar should correspond with the nicotine from that of twelve to eighteen cigarettes. In practice it seems as if even less nicotine than this reached the circulation unless the cigarette is smoked to the very end. Experiments we made some years ago on boys showed that the Manila cigar caused a considerable rise in blood pressure in five or six minutes, followed by collapse, representing respectively the stimulation and depression of nicotine on nerve cells. No such effect could be obtained with cigarettes. The blood of cigarette inhalers, however, contains carbonic oxide—perhaps 5 per cent. for a man who smokes twenty cigarettes a day—and the vertigo, tremors, nausea, anaemia, and loss of memory for recent events are all symptoms which occur in chronic CO poisoning. The cigar smoker, on the contrary, absorbs a considerable amount of nicotine, and true nicotine poisoning may follow from excess.

Some tolerance can be acquired to both nicotine and CO. Nicotine tolerance is brought about by destruction of the alkaloid in the body of the addict; since the alkaloid reaches the circulation slowly and in minute quantities the tissues are able to deal with it. CO tolerance is known in animals, and is due to an increase in the number of red blood cells and percentage of haemoglobin.

The pleasure of smoking is no doubt partly due to the stimulating and later narcotic properties of nicotine, though there are other factors like rhythm and sight to consider. The habit is rarely very strong, as most of the nicotine is destroyed during combustion. A smoker never forms a very strong "craving," but were he to inject his nicotine the tale might be different.

Addiction Drugs.

It is sometimes said that civilization is responsible for the craving for narcotic drugs; that men weary of the strain and anxiety involved in the fight for existence, and that anything that gives them relief from their cares and anxieties is seized with avidity. Those who are addicted to the use of narcotics in civilized communities are rarely the phlegmatic and the dull, but rather those possessed of quick perception, acute sensibility and other higher attributes of mind which go to make up the qualities of high breeding and culture. These people are so highly reflex, so easily responsive to external impressions, that the associations set loose by any ordinary stimulus cause such a complexity of cerebration that the ordinary affairs of life become a burden. In them mental activity quickly gives rise to fatigue, depression, and distress.

The higher faculties of mind, such as those concerned with choice, attention, judgement, and control, are the last to develop in man. They are not completely formed till the age of 15 or 16, and the nerve cells in the brain which are associated with these attributes of mind are the most delicate and by far the most sensitive to narcotic poisons, so that they would be influenced by narcotics before other cells, such as those associated with movements and sensations. It is therefore not difficult to understand why narcotic drugs are so esteemed by such people. In narcotism they shut out contact with reality and drift along knowing little of the reactions of mastery and defeat. They are sheltered by the inhibition of the higher centres. The very acuteness of their intellect is their undoing; they exaggerate the everyday trifles and inconveniences of life out of all proportion to their significance, and life becomes for them oppressive and anxious. Perhaps in a few special instances persons possessed of such vivid sensations may benefit by a narcotic, which limits these conflicting impulses by allowing a freer play of the higher mental faculties; certainly the records of De Quincey and Coleridge suggest such a possibility.

Increased nervous sensibility would seem to be an effect of civilization and wealth. An attempt was made some years ago to compare this sensibility in different nations by estimating the number of women who employed anodynes during normal parturition. The figures obtained were for the United States 70 per cent., Great Britain 50 per cent., and for Spain and Russia 5 per cent. The figures are interesting in view of the prevalence of addiction in the States. The morphinist is not a mental defective, and drug addiction does not lead to insanity or serious nervous diseases needing custodial care, but it makes the habitué more dangerous to society: it diminishes his usefulness to the community and injures his career. The addiction commences as a vice, like smoking, but the developed craving becomes a disease.

There seems to be agreement on the point that the addict is generally a psychopath before he acquires the habit (Rhein, McIver, and Price), while some authorities,

like Block, boldly assert that normal persons never become drug habitués.

The neurotic, having indulged on a few occasions with his narcotic, is so delighted with its effect in giving him some immunity against the stresses and worries of life that he desires, naturally enough, to repeat the panacea, and so the habit is formed, weak at first, but growing with each successive dose, and before he knows of his fetters he is a prisoner. It is not difficult in most cases to recognize in society those who are addicted to drugs. The chief characteristics of drug addicts are plausibility and disorderliness. They are full of schemes for the benefit of others, but, owing to luck always being against them, none of these fructify. They are late for appointments owing to the faults of others, and have no regard for time. In everything they are casual and slack to the extreme limit. Rules of ethic become so blurred that they are hardly regarded, and they lie for the sake of lying. When under the influence of the drug they can work and write, though after a somewhat disjointed and slovenly fashion.

OPIUM.

Opium, or one of its derivatives, is the commonest addiction drug. Those who indulge in opium may be divided into three groups: the opium eater, the opium smoker, and the injector. The opium eater is uncommon amongst Europeans, possibly on account of the constipation, the delayed absorption, and the difficulty in obtaining the large supplies necessary. It is not unusual for the opium eater to consume half a pint or more of laudanum in the twenty-four hours, twenty drops being a liberal dose for a normal man.

The general use of opium eating in India led to the appointment of a Royal Commission in 1895, which reported that moderate indulgence led to no injurious effect and did not shorten life, but that, on the contrary, it tended to ward off sickness and lessened the discomfort consequent on poor food and malarial and other diseases. Sir W. Roberts, the Medical Commissioner, said: "The evidence laid before the Commission showed that in some districts of India the local consumption of opium bore a close relationship to the greater or less prevalence of malaria in the localities." Opium is still taken in the Fen districts of England as a popular remedy to "ward off the ague." The Commission were frequently told that people who were well off and had plenty of good food tolerated the opium habit with impunity, whereas the poor with an insufficient supply of food suffered from it. On the other hand, they were often told that opium ameliorated the lot of the underfed man and enabled him to live longer and better with a scanty diet. In India the opium habit is mainly a habit of middle life and advancing years. This is in marked contrast with the Western morphinist, 70 per cent. of whom, from recent American statistics, are said to be under 30. With one exception, the Commissioners recommended that nothing should be done in the way of restricting the Indian growth and exportation of opium.

The pernicious nature of the habit of *smoking opium* was early recognized in China and India. In China the habit is traceable as early as the end of the seventeenth century, and by the year 1729 it had grown so common in some parts of China that it drew down an imperial edict severely prohibiting opium-smoking shops and the sale of opium for smoking purposes. In the year 1799 an edict, which was issued by the Governor of Canton, directly prohibited the import of opium. Sir J. B. Lyall, one of the Commissioners, in his Memorandum II attached to the Commissioners' Report, says of this edict: "It is a very strong denunciation of the opium habit as morally and physically degrading, and as ruinously expensive."

The amount of alkaloid absorbed in the smoke is very small, both because the amount of opium used in the pipe is small, and because most of the alkaloid in the opium is destroyed. Nevertheless, absorption is rapid and produces an immediate effect. After the first few whiffs there is a feeling of elation, followed in the habitué by delightfully languid ease and an exalted sense of superiority, and later by dreamy sleep. The smoker becomes a slave to the habit, and the evil is enhanced—at all events in the West—since for indulgence the devotee must prosecute his vice in the worst possible surroundings. This way of taking opium is the least objectionable, because the amount of alkaloid taken is so small, because a strong craving is not formed, and because "cure" is relatively easy.

Pipe smoking is usually begun as a group indulgence, while morphinism is solitary and secretive. Both types of habitués commonly use opium with discretion and may indulge in the narcotics for years without apparent evidence of harm.

The dose has to be continually increased, but as the amount of alkaloid absorbed is so very small the craving never reaches great intensity as with those who inject the drug. The varieties of opium chosen by the smoker are not those which contain the greatest proportion of alkaloid. One average pipe of opium contains about three milligrams of morphine, and ten pipes only about half a grain. But the greater part of this is destroyed in the process of smoking, so that the amount absorbed is exceedingly small; this, no doubt, accounts for the comparative ease with which this habit is cured. Opium smoking obtained a distinct vogue in the United States until it was superseded by the infinitely more objectionable habit of injection. It is worth noting that before the war large quantities of morphine were sent yearly into China, often in proprietary packages, as a cure for the smoking habit; a cure it is, but it produces another vice infinitely worse.

In Europe and America the alkaloid is usually *injected* by the hypodermic needle; this is the worst and most pernicious form of taking the drug, and, however the habit has been formed, to obtain the requisite relief the devotee must be continually increasing the dose. The amount of morphine injected daily varies greatly; 15 grains is an ordinary quantity for a morphinist to use in the twenty-four hours, though the same person will double this dose in the case of any small imaginary trouble.

The Department of Health of the City of New York published in an important memorandum statistics and details, by medical experts, of nearly 8,000 cases of drug addicts during ten months. Five per cent. of these patients asserted that the habit resulted from medication during illness; this figure is obviously likely to be too high. Sixty-nine per cent. asserted that bad associations were responsible; this figure may be too low. Seventy per cent. of the patients were under 30; other authorities say that 90 per cent. occur in adolescence. Only 1,580 out of 2,800 received at the clinic were willing to accept treatment and withdrawal of the drug. Those treated were kept six weeks and discharged in good physical condition, "cured." In three months a large proportion had already relapsed in spite of all efforts made to assist them.

Much of the increase in drug addiction has without doubt been started in ignorance; opium smoking was regarded as a harmless pastime to be relinquished as desired; the employment of the "white snuff" cocaine served as a nerve stimulant and pick-me-up; and heroin was used as a substitute for morphine, with the idea that it was not an opium derivative. Much evidence is to hand that difficulty in getting alcohol leads people to try any substance which may have a "stimulant" effect. Sheer ennui, a luxurious life without serious responsibility, lack of exercise, over-eating, fatigue, and dyspepsia are predisposing causes. A few take to morphine because it is accessible; of these, doctors and pharmacists form the majority: no doubt they think that their technical knowledge will save them from abuse.

The addict always finds it to his advantage to co-operate with the distributor of his drug, and almost never will he give information leading to the disclosure of his source of supply.

Withdrawal.

Addicts are held in addiction largely through fear Prolonged indulgence often fails to give them pleasurable sensations; still they must go on in order to avert the crisis of withdrawal. Their horror of pain, both mental and physical, is an obsession, and contact with the responsibilities of the world, they feel, is not to be borne.

The symptoms of withdrawal correspond almost exactly with stimulation of those tissues which morphine in medicinal doses depresses. The yawning, sneezing, nausea, vomiting, and mucous secretion result from stimulation of the medulla; the abdominal pains and diarrhoea from stimulation of Auerbach's plexus; the twitchings, cramps, circulatory troubles (rapid pulse, arrhythmia), and some-

times even convulsions, and collapse hardly distinguishable from surgical shock, are due to excessive stimulation of the cortical cells. A patient seen with these symptoms, even when in a state of collapse, on receiving an injection of his drug, exhibits a transformation almost miraculous; he becomes in a few minutes a relatively normal person. Whatever peculiar characteristic of mind or accidental incidents may determine the formation of the habit, when once it is formed the patient has a real disease, and he can only exist free from great physical and mental pain when he is under the influence of the drug to which he is addicted.

Strong alcoholic beverages taken for a long period of years in some people lead to a craving. It is not necessary that these people should ever have been intoxicated, but only that they should have taken daily libations of alcohol for some time in sufficiently large amounts to depress the central nervous system. The sudden cessation of this habitual alcohol, such as might occur in a man from an accident necessitating his stay in a hospital for a week, is sometimes responsible for an attack of delirium tremens, which is in every way comparable with the condition of a morphinist during morphine starvation.

The explanation I suggest to account for these withdrawal symptoms is that nerve cells after prolonged narcosis are, on reawakening, hyper-excitable. The contrary effect is an everyday axiom, that stimulation is followed by depression. But there is another explanation. Morphine and cocaine maniacs must be continually increasing the dose to get the necessary effect. This acquired tolerance is at least partly explained by the enhanced power of the tissues to destroy the alkaloid. On this we have decisive evidence. But it is also suggested that this acquired tolerance, this inability of cocaine, morphine and other drugs to produce their normal action on the brain, is due to some substance which neutralizes the effects of the poison. We know several such chemical substances which are elaborated by the body and neutralize poison; carbolic acid, the salicylates and camphor are so neutralized and rendered innocuous in the body by relatively simple chemical substances. Moreover, when there is a demand for some substance in the animal economy that substance is elaborated by the tissues. Valenti rendered dogs tolerant to morphine, and found that on suddenly stopping the drug the animal showed typical withdrawal symptoms. He alleges that injection of the serum from these dogs into normal dogs caused similar symptoms. This is mentioned because so much reliance appears to be placed on this work in America. Whether the lack of morphine is or is not the sole determining factor in the production of withdrawal symptoms cannot at present be decided, but it can be stated definitely that neither morphine nor any other drug causes antibody formation.

When once a habit is formed it becomes all but impossible for the addict to renounce it voluntarily, the craving is stronger than the controlling powers; it is the combination of association-memories and an abnormal brain. Few would hesitate to employ opium for the relief of physical pain; why not, then, for the alleviation of mental suffering? The answer must be that there is no such thing as moderation in the habitual employment of narcotics in such people. The craving becomes so intense that the sufferer is unhappy—indeed, almost in agony—unless he is continually under the influence of his drug. Craving is rarely obliterated by a short-time treatment, and unfavourable circumstances will cause it to spring to the surface months after the cure.

Heroine.

Heroine was brought to the notice of the profession in 1898, but it was not much used until 1912. About this time it was employed in the United States, and to a smaller extent in Europe, as an addiction drug and substitute for morphine. Sometimes it was taken by injection, and sometimes as a snuff like cocaine. Both here and in America the public had little difficulty in obtaining any supplies they required of this proprietary substance. It was even much vaunted as a cure for morphinism.

The addict often prefers heroine to morphine. The average morphine addict has perhaps one or two stools weekly, whereas the bowels of the heroine addict are almost normal. The heroine addict does not exhibit so much pallor and emaciation; the symptoms are less pronounced and withdrawal is easier. Heroine is not necessary to the physician, it has no advantages over codeine or morphine, and its use might be forbidden without harming a single genuine patient. The amount consumed varies from 8 to 20 grains daily, and considerable tolerance is attained.

Codeine does not commonly lead to addiction, and only one or two cases of a codeine habit have been recorded.

Cocaine.

Coca leaves have been used from time immemorial by the Indians in the west of South America as a stimulant and narcotic, and the habit survives to the present day, especially in Peru. The Indian takes his coca leaf in much the same way as Europeans employ tea or coffee—as a stimulant in mental and physical fatigue. It is asserted that natives who chew the coca leaf are able to perform long and rapid journeys with less fatigue and without feeling the pangs of hunger and thirst. Attempts by Europeans in the Alps and elsewhere to simulate these effects have not been successful. It may be that there are other constituents in the freshly gathered leaves which are absent from the dried leaves.

In Europe the addict employs the alkaloid cocaine only. This he either takes by the mouth, injects, or uses as a snuff. Formerly coca wines, snuffs, and lozenges were universally sold, but now the hypodermic injection has superseded the other methods almost entirely. When cocaine is sniffed up the nostrils as a powder it is absorbed very rapidly, and produces its effect even more quickly than when injected.

Cocaine acts differently from morphine; it first powerfully stimulates the brain, causing mental excitement and restlessness; the flagging nerve cells are whipped into activity and lassitude and fatigue pass. But this is accompanied by clouding of associations, and a marked depression of the central nervous system always succeeds the stage of excitement. Cocaine fascinates by the rapidity with which it relieves exhaustion and dispels gloom and by a delightful sense of mental and physical vigour. Morphine acts not by stimulating, but by depressing sensory nerve cells in the brain, so that fatigue and mental and physical pains are assuaged.

Tolerance can be acquired to cocaine like morphine, but it is less definite and slower in formation; still there are several cases on record in which 100 grains were taken daily. The prognosis in such addicts is better than with morphine; the abstinence symptoms are less severe and the cocaine can be cut off at once. Cocaine compared with morphine is relatively unimportant, and it may be doubted whether there is any case of cocaine addiction not associated with opium habituation.

Indian Hemp.

Indian hemp (*Cannabis indica*) is hardly taken as a narcotic in Europe, but in India different preparations of the dried flowering tops are made into a drink, are eaten or smoked. For smoking the crude drug is generally mixed with tobacco and the fumes drawn through water. Sometimes the devotees will sit in a circle, and a pipe is passed round, each person taking a few whiffs. Hemp is also used in the East in the preparation of sweetmeats and as a seasoning in cookery. In former times hemp preparations were used as substitutes for opium, but the drug keeps badly, and its unreliability is responsible for its disuse. Hemp intoxication differs from that produced by morphine in the preponderance of pleasant hallucinations and the active motor restlessness.

The Royal Commission on Indian Hemp in 1893 advocated control and restriction; its report aimed at suppressing the excessive use and regulating the moderate use within due limits. Total prohibition was regarded as neither necessary nor expedient.

Prevalence of the Drug Habit.

In this country narcotic drug addicts are as yet comparatively few, but in the United States the position has become serious. Even before the war Dr. Wilbert, of the United States Public Health Service, estimated that there were 175,000 addicts in the country; his figures were based apparently on the importation and sale of opium through trade channels. In a Government report it is estimated that 90 per cent. of the opium and cocaine entering the U.S.A. is used for other than legitimate medical purposes. Austria, it was estimated, only used

half a grain of opium per head per annum, Italy 1 grain, France 3 grains, and America 36 grains; Dr. Copeland, M.O.H. for New York City, puts this figure at 40 grains.

To some extent fashion or opportunity determines the type of drug used: in New York heroine is used almost entirely; in Chicago morphine is the common narcotic, and in cities with a large coloured population cocaine is in vogue.

The vast majority of cases of opium smoking, heroine and cocaine sniffing are acquired socially, though it is agreed in America that the largest single factor in the production of the morphine addict is professional medication.

Treatments for morphinism I am not considering, but it is generally agreed by those best fitted to give an opinion that the proper treatment, besides custodial care, consists in (1) the gradual withdrawal of the drug, in about ten days; (2) intensive purgation; (3) the administration of atropine or hyoscine. By this treatment the patient may be discharged in six weeks in good physical condition, and apparently a normal man without craving.

But can we cure a character, convert weakness into strength, so that temptation disappears? Perhaps proper education of the higher faculties of mind, like self-control, may do much, but simply to control conduct so that choice cannot be exerted is to court disaster. True temperance is dependent on self-control, not on control by others. Perhaps if children were taught something of the realities of the life into which they must presently enter, and received more vocational guidance, they would be in a better position to combat the difficulties and temptations to which they must presently be subjected, certainly in a better position than by a system of education apparently devised to fit a life of cultured leisure.

Alcohol.

It would hardly be fitting to conclude without a brief word on *alcohol*. Fermented beverages, and more especially beer, have formed from time immemorial the national drink of Great Britain. The introduction of the caffeine beverages did not oust them, and, although their popularity has not waned, the amount consumed is steadily diminishing before legislative restrictions and the attacks of the abstainers. England was once a drunken nation, and Mr. Lecky tells us that in 1688, 90 gallons of beer a head were consumed per annum: at the beginning of this century this had diminished to 30 gallons. Now it must be very much less and the percentage of contained alcohol smaller.

It has been clearly shown that as the difficulties of obtaining alcoholic beverages have become greater the consumption of drugs and truly noxious substances has become greater also. It is almost inconceivable to what lengths men will go to obtain something as a substitute for alcoholic beverages, and very few drugs or chemical substances—especially volatile chemicals—have not been used. This evil effect of prohibition has necessarily been more evident in America, where in past times most of the States have at some time, though generally only for a short period, adopted the principle of prohibition. Wood spirit (methyl alcohol) is one such evil substance; as little as a teaspoonful may cause blindness and an ounce death; several cases of poisoning have recently been reported from America. Methyl alcohol is oxidized in the body to formic aldehyde and formic acid, and it is to the production of these substances that the poisonous action is due.

Ethyl alcohol must be regarded as an addiction drug, though true addiction, in the same sense as morphinism, must be extremely rare. It is interesting to note that many authorities believe that habitual inebriety is not acquired, in the strict sense of the term, but that the inebriate starts life handicapped by imperfect brain development. That is to say, he takes alcohol in excess, just as he does everything else which is foolish and wrong.

It is notorious that morphine addicts rarely turn to alcohol; if they do, it seldom gives them what they seek, and they almost invariably return to narcotics. De Quincey says: "I do not readily believe that any man having once tasted the divine luxuries of opium will afterwards descend to the gross and mortal enjoyments of alcohol." Nobody questions the evils produced by alcohol in the intemperate, but for the vast majority moderation in alcoholic beverages produces pleasure and benefit. Ought we then to advocate prohibition? Would the benefits so accruing outweigh the disadvantages? Prohibition in other countries has led to other and worse addictions and to industrial unrest, evils which appear to counterbalance the benefits. It is an axiom with lawyers that legislation for hard cases makes bad law; the plethora of these which we have experienced in recent times should make us chary in advocating yet another. Apart from this, prohibition is at present impracticable, as it would mean a loss to the revenue of over one hundred millions annually.

Plato says: "No one desires drink simply but good drink; nor food simply but good food." To the average man these add a little more joy and beauty to life. The position is perhaps summed up by Matthew Arnold, who says: "Wine used in moderation adds to the agreeableness of life."

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PYROGENIC THERAPY.

("*PROTEIN SHOCK.*")

BY

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(A Further Contribution.)

The paper published in this Journal, vol. i, 1918, p. 195, described a severe febrile reaction which I obtained in 1916–17 with certain colloidal metals used intravenously; a reaction identical with that which certain American investigators had been producing at the same time by the intravenous use of suspensions of killed typhoid and coli bacilli (vaccines), and termed by them "protein shock." I found, however, that the full reactions following these particular metallic colloids could be produced by the protein used as the protective or coating to the metallic particles and in the same dosage. In an inert medium, such as gum water, the metallic suspensions were destitute of any fever-producing properties. In a recent examination of various well known metallic colloids the characteristic protein reactions were very marked, and so the clinical results would be questionable. When the metallic particles were suspended in an inert watery medium and injected in considerable quantity, the slight rise of temperature which sometimes followed was found to be quite capable of production by the water of the continuous phase.

"Protein shock" being rather an unfortunate expression,* I suggested "pyrogenic therapy" instead, chiefly in view of the fact that the reaction was produced by substances called "pyrogens" by Burdon-Sanderson. Moreover, the fever so induced is essential, as no benefit accrues without it. The view is, indeed, gaining ground that the high temperature, which is ushered in by a rigor more or less severe, is the crucial factor. Further reference to this will be made. In any case it is evident that some such distinguishing appellation is now needed, as "protein therapy" is a generic term applicable to uses of protein which are entirely different and distinct.

The cases in which the reactions were produced by the protein-protected colloidal metals were chiefly those of delayed resolution in pneumonias and pleurisies, with rises of temperatures to 100° and 101° F. for some considerable time. Recovery seemed complete at the end of the reaction; the temperature remained normal and the local lesions gradually cleared up. Some cases of acute pneumonia were then tried, but the results were by no means favourable. Certainly a fall of temperature soon occurred; but this proved to be a negative phase effect, as it always rose again to about the original level. These trials indicated that with a high temperature the defences

* In the first place there is no shock in the true sense, and, secondly, the reaction can be produced by certain non-protein substances.

of the body are already fully engaged, and the introduction of a pyrogenic substance is illogical, and merely adds to an already heavy burden. This treatment is therefore indicated in subacute or chronic conditions, wherein the defensive reserves are quiescent or only partially called out.

Cases of arthritis of various kinds have mainly been treated, with on the whole very favourable results; but skin affections and many infective disorders have also been laid under contribution. Where the response is good no other treatment gives such rapid or complete relief. I wish now to record briefly some results obtained in certain functional neuroses presenting pain or paraesthesia or both, and probably of toxic origin. Though not serious, these disorders are very persistent and often entail intolerable discomfort, being more or less refractory to ordinary methods of treatment.

Case 1.—A woman, aged 58, had for several months very severe cramp in the feet and legs during the night which obliged her to get up and endeavour to obtain sleep in a chair. Many remedies were tried. She had rheumatic fever at 21; she was not alcoholic. Her teeth were very defective; she was otherwise healthy. Pyrogenesis was induced with alfalfa seed proteose with immediate relief (temperature 102.8° F.) A second reaction was induced in a week, followed by permanent relief. [Two other cases somewhat similar have been successful.]

Case 2.—A woman, aged 47, suffered pain with paraesthesia (neuritic) for weeks over the left shoulder and back, especially troublesome at night. Only temporary relief was obtained from medicine and topical applications. She was otherwise healthy; the menses had ceased some time ago. Two reactions were induced (102° F. and 103.4° F.), using caseose as the pyrogen, with permanent cessation of the symptoms.

Case 3.—A woman, aged 48, had got acroparaesthesia for three months—numbness and tingling ("pins and needles")—in both hands, with pains radiating up the forearms. She was rheumatic, but otherwise in good health. She had tried electrical treatment without relief. A very active lecitho-protein was used which gave a good reaction (103° F.). The temperature went down slowly, being 100° F. after twenty-four hours; afterwards it became subnormal. Complete relief ensued, and there was very little further inconvenience. [Another case gave a similar result.]

Case 4.—A woman, aged 48, strong and healthy, had for two months been subject to most distressing noises in the head, which she thought "would drive her mad," and likened to "a traction engine in the brain." There was no apparent cause, no deafness or ear disease. The noises were continuous night and day. A maximal reaction was induced with lecithoprotein (temperature 104.4° F.). The temperature fell slowly, being 101° on the third day. By this time the noises had totally disappeared, and up till now, after ten months, there has not been the slightest return, and the patient enjoys excellent health. [Prolonged elevation of temperature as in the above case is not usual, though pyrexia lasting twelve days has been noted. More commonly the temperature falls to subnormal within eighteen to twenty-four hours.]

The only other case of tinnitus I have treated was that of a male, aged 39; I saw him in consultation with Dr. Hartigan of North Kensington, but in this instance there was deafness in one ear and a long history of Ménière's disease. The case had resisted every treatment, and pyrogenic therapy was tried as a *dernier ressort*. The patient was tolerant to moderate pyrogenic doses, but gave a maximal reaction to 500 million of recent *B. typhosus*, in which a second rigor occurred a few hours after the first. The symptoms remained quiescent for a week or so and then returned.

This treatment is not to be lightly undertaken. Careful consideration must be given beforehand to the condition of the patient, the pyrogen to be used, and the dosage. The patient should have a good reserve of strength, an efficient heart muscle, distensile arteries, and a safe blood pressure. Elderly feeble subjects are unsuitable; also those more or less exhausted by long illness or whose defensive resources have already been largely used up by prolonged fever. In suitable cases the full pyrogenic reaction may be necessary for a successful result—namely, a good rigor, high pyrexia, body pains, profuse sweating, and usually sickness and diarrhoea. If two such reactions (at a week's interval) fail, it is little use trying more. But some cases, considered unfit to stand the maximal reaction, may derive great benefit from submaximal doses more frequently repeated, and in yet others the condition may be such as to render the maximal reaction unnecessary. A temperature of 102.2° F. should be aimed at, however. As regards the pyrogen to be used, that depends largely on the experience of the operator, but for those not specially acquainted with the various substances, typhoid vaccine, or caseose (2 c.cm. and upwards of a 2 per cent. solution), may be employed. Personally, I have the caseose prepared by gentle hydrolysis. Owing to its content in albumoses, Witte's peptone in large doses is sometimes used, but it is dangerous, as it may induce during or immediately after the injection, even in non-sensitized persons, symptoms of asphyxiation and collapse, with possibly serious consequences. As regards the bacterial suspensions, it is important to ascertain beforehand the degree of subculture to which they have been subjected. *B. typhosus*, for instance, subcultured for a long time, possibly years, has been largely detoxicated, and gives a feeble reaction in comparison with a recent culture. Mistakes have been made in this way in regard to the relative susceptibilities of patients. Usual doses are 50 to 200 million of a fresh culture and 100 to 500 million and upwards of an old one. Before giving the full dose it is necessary to find out how the patient is going to react to the pyrogen selected, as great variations are encountered. The only satisfactory way of doing this is by giving a small trial dose. If the reaction it produces is considered excessive, it may be best to select another pyrogen and test it in the same way. In either case, the full dose is based on the result. The particular pyrogen used is immaterial, so far as the characteristic effects are concerned, and in the case of infections there is no added advantage in using the particular organism, the reaction is entirely non-specific. Typhoid-immune animals show the same degree of hyperleucocytosis when injected with *B. coli* as with *B. typhosus* (McWilliams). Culver[1] treated thirteen cases of gonococcal arthritis with non-specific proteose, and nine cases with killed gonococci (three to five injections spread over three weeks). The opsonin content was determined by the extinction method (Klein) and the bactericidal substance in the serum by the dilution method. The results were indistinguishable in the two sets. Others have verified these results.

The best time to give the injection is the early part of the day; a cup of tea or coffee with a little bread-and-butter may be allowed a few hours previously, and the bowels should be emptied. The patient must be in bed; warmth is grateful during the chill, and if the pains are severe aspirin will give relief. It is well to have adrenaline at hand in case of any contretemps, but up to the present I have not had occasion to use it.

That temperature is a natural means of defence is, of course, too well recognized to require more than mention. But in infection there is an optimal temperature which no doubt varies according to the infecting organism on the one hand and the condition and constitution of the patient on the other. When the temperature is over the optimum —Nature having overshot the mark, so to speak—although combustion of metabolic products may be energetic, yet the factors conducing to recovery, the cellular products of defence and attack, suffer injury, and in time become exhausted. A similar state of exhaustion may occur in cases of long-continued fever. For most infectious fevers the optimal temperatures lie between 102° and 105° F. The object of pyrogenic therapy is to induce a temperature within these limits, in those infective or toxic conditions wherein a sufficient stimulus for the induction of pyrexia is naturally lacking or else is weakened, though capable of producing a ready response if artificially roused. By so doing we draw on the accumulated stores in various parts of the body, secure the production and mobilization of new weapons of attack, and direct them to the seat of disturbance.

Let us consider briefly the effects of this induced pyrexia. They are roughly divisible into the physico-chemical and the "vital." The former consist mainly in a greatly increased transformation of energy: increase in the velocity coefficient of chemical systems, with alteration of the equilibrium constant, and greater activity of the catalyst. Enzyme action may be doubled or trebled. The rate of adsorption is increased with diminution in the amount adsorbed—that is, the dissociation of adsorption compounds is increased. Hence increased dissociation of oxyhaemoglobin with supply of more oxygen to the tissues. Energy is also liberated by the lowering of surface tension, which at a critical temperature may disappear, possessing as it does a negative temperature coefficient. The hydration of ions is diminished, and so their velocity increased from reduced friction. The viscosity of the blood is reduced and its flow rendered easier, while the dilatation of the blood vessels makes them more permeable to the serum.

What may be termed the "vital" changes in the pyrogenic reaction, so far as known, are chiefly expressions of a powerful stimulation of certain productive capacities of the cells and tissues, more especially those that are extra-ordinary, and the rapid mobilization of these products. After an initial leucopenia there is a leucocytosis in which a striking blood picture has been described and figured, that by Cowie and Calhoun[2] showing in some cases many young and atypical cells, myelocytes, mast cells, nucleated reds, and increased size and development of the platelets. Changes in the white cells, the blood pressure, and pulse frequency have been described (with illustrative charts) by Gow.[3] Miller and Perry[4] record the curious phenomenon of phagocytosis of erythrocytes in the peripheral blood by the large mononuclear cells. Others have obtained evidence of increase in circulating antibodies, at first by detachment from their mooring stations and later (two or three days) by new production.

Now, changes very similar have been described as the effect of artificial heat. Thus, J. B. Murphy and Sturm,[5] in a series of experiments, found that mice subjected to dry heat of 55° to 65° C. for five minutes showed an initial leucopenia, followed by leucocytosis, which continued for two to three weeks, the increase amounting to a gain of over 200 to 300 per cent. above the normal for the animal. Mice so treated developed a high degree of immunity to cancer grafts as compared with the controls. Precisely similar results were obtained with bovine tubercle bacilli, the resistance in the heated mice being increased from two to three-fold. In regard to phagocytosis, Ledingham[6] found that when leucocytes were put in contact with fresh serum and staphylococci and incubated together at different temperatures for the same period of time (varying from 15 to 45 minutes) phagocytosis was considerably increased at temperatures over 37° C., up to 43° C. McCallum[7] states that the influence of temperature has not hitherto been sufficiently recognized, and quotes a number of experiments showing that animals kept at a high temperature in a thermostat room, in whom small doses of bacteria or toxins had been injected at intervals, developed a much more effective defence than those left at ordinary temperatures, in that "agglutinins and bacteriolytic substances were produced far more quickly and in much greater amounts than in the controls."

We find, as a matter of fact, that the conditions amenable to pyrogen therapy are chiefly those which are benefited by thermal baths (water or air), such as arthritis (various), neuritis and neuralgia or myalgia, certain skin affections, and subacute or chronic inflammatory exudations; and, further, the results are so far comparable in view of the more intense and prolonged pyrexia produced by the pyrogen and the collateral effects of its autogeneration.

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ILIO-TIBIAL BAND GRAFTS FOR THE RADICAL CURE OF LARGE INGUINAL HERNIAE.

BY

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The difficulty of securing a satisfactory radical cure in cases of large inguinal herniae is so well known that it need not be enlarged upon, but if evidence is needed it is furnished by the number of operations which have been described for the purpose. It is also obvious that the results obtained are not always entirely successful, and there is, therefore, some excuse for this description of yet another method of dealing with the condition.

Fortunately, herniae which cannot be treated by Bassini's operation, or some modification of it, are not common, but in the three cases to be described the base of the sac was very wide, and the lower fibres of the internal oblique—those arising from Poupart's ligament—were so weak that it was impossible to bring down any part of the muscle to the deep surface of the ligament; therefore, after closing the base of the sac by interlocking ligatures, or by a continuous suture, there remained nothing to strengthen the abdominal wall over the hernial site except the external oblique, which was greatly stretched and weakened in each case, the superficial fascia and the skin. Recurrence was practically certain if the operation had been completed, leaving the abdominal wall in such a weak condition, and I thought it would be worth while to try a graft of the ilio-tibial band to take the place of the internal oblique.

The usual incision for the radical cure of hernia was made, and, after ligaturing bleeding points, the external oblique was divided over the whole length of the cord. The remains of the internal oblique were raised from the underlying structures by blunt dissection, and the sac found and separated in the usual way. The sac was opened and the contents replaced in the abdomen, and, with a finger in the sac to prevent the exit of these contents, interlocking sutures were placed and tied, and the sac was removed about a quarter of an inch beyond the ligatures. The cut edges were also brought together by a continuous silk suture. Two strips of gauze were passed beneath the cord, so that it might be lifted out of the way while the graft was being sewn into position beneath.

I then made a semilunar incision, with its base anterior on the outer side of the patient's thigh, raised the flap of skin and subcutaneous tissue, and removed a piece of ilio-tibial band of such a size and shape that, when folded diagonally, it would fill the triangular space between Poupart's ligament, the outer border of the rectus sheath, and the exit of the cord through the fascia transversalis.

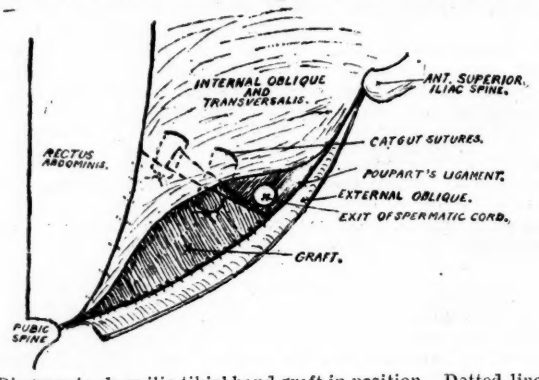

Diagram to show ilio-tibial band graft in position. Dotted lines indicate deep or buried structures or stitches. The external oblique is not shown except in relation to Poupart's ligament. The internal oblique external to the exit of the cord should be brought down to Poupart's ligament if necessary.

The folded edge representing the diagonal of the piece of band removed was stitched by a continuous suture of silk to the deep edge of Poupart's ligament from the attachment of the conjoined tendon to the pubic spine to a point a little external to the exit of the cord, and the inner edge was also stitched with silk to the outer border of the rectus sheath (conjoined tendon). The upper and outer edge was passed beneath the fibres of the internal oblique and transversalis muscles, and anchored to the deep surface of these by two or more mattress sutures of chromicized catgut, so that when contraction occurred during some effort requiring the use of the muscles of the abdominal wall, the graft should be drawn tight, and so offer the greatest possible resistance to the exit of any of the abdominal contents. These deep sutures should, of course, not be drawn so tight as to cause strangulation of the muscle fibres included by them. If any part of the internal oblique could be brought down to the deep surface of Poupart's ligament over the graft, this was done. The cord was replaced on the graft, and the external oblique and superficial structures were closed over it in the usual manner.

Three cases were operated on in this way, and the following is a brief account of them:

Case I.

Pte. T.: left inguinal hernia. Operation on December 3rd, 1915. The hernia was very large, and the base of the sac would allow three fingers to be passed into the abdomen. The external oblique was very much stretched, and its oblique fibres were widely separated; the intercolumnar fibres were very weak, and the whole structure could not have given any support to the abdominal wall in the hernial region. The part of the internal oblique arising from Poupart's ligament was very weak also, and would not have offered any effective resistance if it had been brought down to the ligament. After ligature and

removal of the sac a single layer of ilio-tibial band was inserted in the way described and the wound was closed.

The patient replied to a letter of mine on June 16th, 1921, stating that he is a miner, and is able to do full work without any trouble; that he has never worn a truss; that the scar does not bulge on coughing or straining, and that he is most grateful for the result.

CASE II.

A. M. B.: double inguinal hernia. Left side operated on March 15th, 1917. The hernia was as large as in the first case. A double thickness of ilio-tibial band, produced by folding the piece removed diagonally, was inserted in the way described.

In answer to my inquiry the patient stated, on June 19th, 1921, that, although he has some cramp-like pains in the groin, especially after sexual intercourse, he has no bulging of the hernial region on coughing or straining, and does not wear a truss. He also expresses gratitude for the operation, which, he says, is quite successful.

I operated on the other side at a subsequent date. Here the conditions were much better, the base of the sac being smaller, and the internal oblique stronger. I did not consider a graft necessary on this side, and did an ordinary Bassini's operation, which is quite successful.

CASE III.

Bdr. F. C.: left inguinal hernia. Operation on May 2nd, 1917. The abdominal wall was very weak in the hernial region and the sac had a large opening. I could not have made a satisfactory repair by the usual method, and therefore inserted a folded graft as described.

The patient writes on June 19th, 1921, to say that the operation is quite successful. He has no pain whatever, and no bulging on sneezing, coughing, or straining. I quote his own words: "I am perfectly cured, and never felt so well before. The work I do is heavy, but I never feel any pain, so shall never want to wear a truss."

The operation has stood the test of six years in the first case and of four years in each of the others without recurrence of the hernia, and two of the patients have been, and are, doing heavy work. I am confident that repair by usual methods would not have been satisfactory, and I believe that this method may be of considerable value in difficult cases. I have not seen any trouble from the removal of the piece of ilio-tibial band. There is a slight bulging of muscle through the gap for a few days after the operation, but none of these patients had muscle hernia on leaving hospital.

For stitching the graft into position I used silk, because I thought it would remain unabsorbed for a considerable time, and would therefore hold the graft until it was firmly united to the neighbouring tissues, but, provided catgut which will last three weeks and is absolutely sterile can be obtained, I do not see any reason why it should not be used if desired. In each case healing was uneventful, and I had no trouble from the use of silk.

IONIC MEDICATION IN THE TREATMENT OF NEURITIC AND RHEUMATIC PAINS.

BY

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CASES of neuritic and rheumatic pains are frequent events in general practice, and not a few of them prove rebellious to treatment. It may be questioned whether in such cases practitioners generally realize the benefit that may be obtained by the employment of ionic medication, especially in cases where ordinary drug treatment fails to give relief.

The treatment is easily carried out by means of the following apparatus, all of which may be obtained at small cost from makers of electrical requirements: namely, a switchboard connected with the electrical mains supply, with a sliding resistance, and with a milliampère meter in circuit; two insulated conductors connected with the poles of the battery and with flexible metal electrodes 4 in. by 3 in.; two pads, each of 16 to 20 layers of lint and of a size sufficient to prevent the metal electrodes from coming in contact with the patient's skin; 2 per cent. solutions of quinine hydrochloride and of sodium salicylate and 1 per cent. of potassium iodide for different conditions, while at the indifferent electrode a 2 per cent. solution of common salt is employed. The only other requirements are bandages to keep the pads in close contact with the patient's body and a suitable couch.

In all cases the pads, especially the one placed in connexion with the positive pole, must be thoroughly saturated with the warm solution employed. The current must invariably be applied and switched off very slowly and smoothly. A current of from 15 to 75 milliampères is employed according to the locality of the pain and the age, sex, and condition of the patient. The séance should be given daily for twenty to forty minutes. Occasionally I have combined ionization with high-frequency massage to the general advantage of the patient and as a helpful agency in the encouragement of sleep.

Notes of a few cases lately under my care may induce others to test this method of treatment:

Trigeminal neuralgia. A lady, aged 52, sent to me in February, 1921, by Dr. Archd. Sloan, complained of neuralgic pain in the area of the left fifth cranial nerve, and particularly in the supra-orbital region. The pain had been present more or less continuously for twenty years, and was aggravated when the patient washed her face or when she was exposed to wind. Ionization with solutions of quinine hydrochloride (connected with the positive pole), of sodium salicylate, or of potassium iodide, each of the last connected with the negative pole, were employed on successive days. After thirty-three applications there was distinct improvement, and by the end of April the pain had completely ceased. I saw her on August 5th, when she informed me that since the end of April she had had no pain, and that the experiences which had previously provoked or aggravated the pain could now be enjoyed without any discomfort. In addition, her general health had greatly improved.

I have successfully treated many cases of neuralgia of the superficial branches of the circumflex and musculospiral nerves. Their intractability to ordinary methods is well known, yet, with very few exceptions, I find that relief can be secured by ionic medication, a solution of quinine hydrochloride being the most useful. One case as an example may be cited.

A solicitor, aged 52, otherwise in excellent health, sent to me by Dr. Walls Christie in January, 1921, complained of a sudden attack of pain of three days' duration in the right arm, the pain being so severe as to cripple the use of the limb. At the same time there had developed a sensation of numbness in the outer three and a half fingers. Seventeen applications of ionization with a solution of quinine hydrochloride effected a complete cure, and neither the pain nor the numbness has returned.

The average number of applications required is from fifteen to twenty, but many patients are relieved after a less extended course. A lady, 40 years of age, sent to me by Dr. R. O. Adamson on account of severe brachial neuralgia, was completely relieved after six applications. Another lady, aged 33, sent by Dr. W. McMillan, had her brachial neuralgia removed after nine visits.

Neuralgia of the smaller occipital nerve. An elderly lady, advised by Dr. Linton of Renfrew and Dr. George S. Middleton of Glasgow, came into my private nursing home in September, 1920, complaining of great pain at the back of the head and over the right parietal region and vertex. The pain had lasted for more than six months. Ordinary drug treatment and rest in bed had produced little result. Ionic medication with solutions of quinine hydrochloride and of sodium salicylate, however, gave a complete and lasting cure.

Neuralgia in the region of both tuber ischii. A young medical student was referred to me by Dr. Ernest G. Fortune on account of pain in the region of both hips. This had lasted for five years and had prevented him from engaging in any form of sport to which he had previously been devoted. He could stand, lie down, and walk slowly, but any hurried effort caused him suffering. I skiagraphed both hip-joints but discovered nothing abnormal. Quinine ionization was applied twice over each tuber on successive days with surprising effect. Three evenings afterwards he went to a dance "by way of a trial," as he remarked, and took part in every dance with no sensation of pain at the time or ill effect thereafter.

Neuralgia of the twelfth dorsal nerve. A colliery manager, aged 60, consulted me fifteen months ago on account of a severe and continuous pain over the area supplied by the twelfth left dorsal nerve. The pain had troubled him more or less for two years, and though he had tried many forms of treatment, including, he said, the surgical division of the nerve, he had derived no benefit. Ionization with quinine, however, relieved him very considerably and permitted him to continue his work, though this entailed exposure to heat and cold and to wet clothes.

I may, perhaps, be permitted to quote my own case. About nine years ago I was completely laid aside for three weeks with violent neuritic spasmodic pain in the region of the twelfth left dorsal nerve, extending to the thigh. Ionization with quinine gradually produced complete cure, and though I have since been engaged on home military service for four and a half years, have spent months under canvas, been exposed often to wet and inclement weather, and engaged constantly in field exercises and route marches, I have had no return of the pain.

In cases of pain, which for want of other explanation must be termed "rheumatic," the results of ionic medication are most gratifying. A solution of sodium salicylate connected by an electrode with the negative pole is applied to the part affected, while a solution of common salt is used at the indifferent electrode in connexion with the positive pole.

A young engineer engaged in work involving exposure to cold and damp came to me in March, 1921, with "rheumatism" in both feet. He had suffered much for several years, and could walk only with difficulty and pain. The knees and the finger-joints were also affected. After a somewhat prolonged course of ionization with sodium salicylate he made a complete recovery, and was able to walk easily and without discomfort. His swollen finger-joints became normal, and this enabled him to resume piano playing, from which he had previously been debarred.

Ionization with copper metal to the interior of the uterus gives satisfactory results in cases of endometritis and menorrhagia. The whole uterine mucous membrane is dealt with and no anaesthetic is required. The operation is of the simplest character. A patient of Dr. Alexander Thomson, suffering from a dilated meatus urinarius following childbirth, with inability to retain urine on any movement, was completely cured by the introduction of a copper probe through which a very gentle continuous current of from 3 to 5 milliampères was passed for five minutes at a time. The useful effect of zinc ionization in cases of carbuncles and boils is also well known.

It is with every confidence that I venture to encourage practitioners to test ionic medication as a simple and effective therapeutic agent in cases such as are here described.

A CASE OF CHOLECYSTGASTROSTOMY.

BY

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The following case presents features of interest and seems worthy of record:

A married woman, aged 45, complained of ill health of seven years' duration. She suffered from attacks of abdominal discomfort half an hour after meals; they were never very severe, and she rarely vomited; she had had no melaena or haematemesis so far as she was aware. At intervals of a few weeks she had had attacks of nausea and diarrhoea. During the previous two months she had been worse and was losing weight. She was pasty-faced and sallow, but not jaundiced. The temperature and pulse were normal, as was the urine. Nothing of note was found on examination of the chest or rectum. There was a small, firm, rather fixed swelling just above and to the right of the umbilicus. The spleen was readily palpable an inch below the costal margin. The liver was not enlarged, nor the stomach dilated. A blood count showed merely slight secondary anaemia, and a barium skiagram gave no evidence of ulcer or pyloric stenosis.

Operation.

The abdomen was opened above the umbilicus. The swelling proved to be a hard nodular mass in the head of the pancreas. The liver, gall bladder, and ducts were normal to sight and touch. The splenic vein was dilated, and ran directly into the pancreatic mass, and the splenic enlargement was clearly due to venous engorgement. The diagnosis between chronic pancreatitis and carcinoma was uncertain. On the assumption that the swelling was probably inflammatory, some form of drainage of the biliary passages seemed indicated, and by cholecystenterostomy rather than cholecystostomy. In view of the great induration of the pancreas and enlargement of the spleen it seemed doubtful whether a few weeks' drainage would suffice.

Cholecystenterostomy, then, was decided upon in the hope that it would prove curative if the swelling were inflammatory. If it were malignant it would serve to prevent jaundice from the inevitable and early obstruction of the common duct. The pancreatic mass so overlapped and fixed the duodenum that no amount of mobilization would render it available. My experience has been that the use of the colon is preferable to that of the jejunum, and arrangements for cholecystcolostomy were being made when it was noticed the relation of the gall bladder to the stomach was such that an anastomosis could readily be made without disturbing their relations. This was done by simple suture in two layers and the abdomen closed. Recovery was uninterrupted.

Four months later the patient expresses herself as being completely relieved of her symptoms and having "never felt better in her life." The pancreatic mass was just appreciable to palpation, although distinctly smaller, and the spleen could still be felt.

Operations with the object of short-circuiting the common bile duct date from 1830, when von Winiwarter of Liége, at the suggestion of Nussbaum, performed the first. He used the colon and operated in six stages, lasting from July 20th, 1880, until November 14th, 1881. The first operation in this country was performed by Mayo Robson in one stage in 1889. The use of the duodenum was suggested by Cozi, and the first operations were those of Terrier and Bardenheuer. No doubt physiologically the best site for the junction is the duodenum, but as a matter of practical surgery it is not always available.

The objection to the use of the jejunum is that regurgitant vomiting, such as used to follow gastro-enterostomy with a "loop," is not unknown. This may be partially guarded against by the plan recommended by Mickulicz of performing a lateral anastomosis between the two limbs of the jejunal loop, but probably the best method is to make a retrocolic junction. An opening is made in the transverse mesocolon and the jejunum pulled through it. The operation is completed by drawing the junction down and suturing it to the edges of the aperture in the mesocolon, just as in posterior gastrojejunostomy. To the use of the colon there is the objection that there is an appreciable risk of suppurative cholangitis. In practice, however, this does not often occur, and the anatomical suitability of the colon has caused its frequent use with generally satisfactory results.

Attention seems to have first been drawn to the possibilities of the use of the stomach for this purpose by Oddi[1] in 1887. He experimented on dogs, and found that the diversion of the bile into the stomach was quite consistent with perfect health. His observations were confirmed by Cannac, Masse, Mocquot and others.

The first operation on the human subject was performed in Vienna on September 21st, 1892, by Wickhoff and Angelberger[2] in a case of gall stones and stricture of the common duct. The patient recovered. They were followed by Terrier[3] on December 19th, 1895, in a case of carcinoma of the head of the pancreas. The patient survived ten months. Monod[4] did a similar operation on June 1st, 1896, but the patient died the next day. Jaboulay[5] recommended it as the operation of choice in tumours of the head of the pancreas. About this time cases were also published by Montagnon and Duchamp,[6] and by Krumm,[7] while Perrin[8] in 1902 collected fourteen cases, including the foregoing, with generally satisfactory results. Kehr[9] has several times strongly advocated the operation, and had, in 1914, performed it sixty-two times, but gives no results.

Cases in the literature since 1914 are naturally scarce, but the subject has been referred to in America by Barr,[10] Jacobson,[11] and Erdmann.[12] The latter quotes Moynihan as having operated in this way twenty-one times with one death, and as having seen no disability from the presence of bile in the stomach. Moynihan advocates operation in all cases of obstructive jaundice, however positive may be the evidence of malignancy. The diagnosis is often difficult and never certain.

To sum up, it may be said that, while short-circuiting operations of this type will rarely be performed to-day—as were many of the earlier ones—for stones impacted in the common duct, indications will still be found, especially in cases of pancreatic disease. It is submitted that when the indication arises the use of the stomach for the anastomosis makes the operation technically easy, physiologically sound, and unlikely to be followed by undesirable complications.

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The Japanese Home Office is about to investigate the death rate of infants in Tokyo, basing itself on the police statistics of the deaths of infants under the age of 5 years and their causes from 1916–20. It is believed that in the poor quarters of Tokyo the infantile death rate reaches 37 per cent. of births.

EIGHTY-NINTH ANNUAL MEETING
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SECTION OF NEUROLOGY AND PSYCHIATRY.

Professor Ashley Mackintosh, M.D., F.R.C.P.Edin., President.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF BORDERLAND CASES.

OPENING PAPER

BY

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The duty has been placed in my hands of opening the discussion on the subject of the diagnosis and treatment of borderland cases from the psychiatric point of view. The nature of this borderland which we are to consider can be surmised from the arrangements which have been made for opening this discussion. On the one side of the boundary line we have the region of the neuroses consisting of disorders presenting such symptoms as those of spasm and paralysis, of paraesthesia and anaesthesia. On the other side we have the territory of the psychoses, which includes such disorders as those of mania and melancholia, and of dementia praecox. As a result of the closer attention and great study given in recent years to nervous and to mental disorders, two facts, not, however, unsuspected before, have emerged into prominence. The first of these is that anything of the nature of a borderline or of any hard and fast boundary does not exist. It has been found that the neuroses and the psychoses pass as gradually, as gently, and as naturally from one to the other as day passes into night and as darkness turns into dawn. It would be wrong, however, to conclude from this statement that all neuroses may by extension develop into psychoses, for that is not the case. Rather there are so many intermediate forms that the transition from the one group of symptoms to the other is easily made. The second fact observed is that the intermediate zone, this so-called borderland, is not a narrow and negligible strip of territory, but is a broad and extensive domain, which from the influence it exercises on human life, on its happiness or misery, is also a very important one.

This brief introduction does not convey a complete picture of what we mean by borderland cases, and the subject must in addition be approached by another route. By borderland cases we mean those in which some form of disorder of the mind plays an important, if not essential part. In some of these the symptoms themselves are of a nature which are at once recognized to be clearly mental; symptoms such as phobias, anxiety states, and compulsive obsessions. The clearly mental cases, however, of a more serious nature, presenting mental symptoms amounting to legal insanity, are excluded from the borderland group, for they are regarded as being definitely across and over the border. It will be necessary later to refer to this legal complication. In other cases the symptoms are not obviously mental and are apparently of a physical character, such as paralysis and anaesthesia. But even in these cases, in which, when looked at objectively, the symptoms appear to be physical, when studied more carefully from within, they are often found in their origin and essential nature to be purely mental. The paralysis of a limb, the loss of the power of speech or of hearing, may depend on an emotion or an idea, and what is very important from the patient's point of view, these symptoms may suddenly vanish and healthy function be restored by purely mental agencies. The borderland group, therefore, includes all cases presenting symptoms of a mental nature or of mental origin, but it excludes those of certifiable insanity, which are regarded as definitely over the border.

There is one qualification which it is necessary to make to this statement. The group as defined above is large, and perhaps extends too far in one direction, for it may include cases with very slight or evanescent symptoms as well as those with more serious, prolonged, and even permanent ones. Although there is not always a scientific reason for any differentiation between these, in practice it has been found expedient to restrict the term "borderland cases" to those of the more serious type—to those in which the question of certifiable insanity, if it does not arise as a real issue to be considered, at least exists mentally in our conception of the type of case, and this not as a remote but as a related contingency.

There are now three considerations arising from these conclusions which are cognate to the subject if not of it. There is in the first place, the admission of the wide sphere of symptomatology which comes under the category of mental, either in nature or in origin. If we exclude mechanical disabilities, such as those due to the destruction of a tissue or an organ, most of the symptoms of which a patient complains when in ill health are mental. The commonest symptom of all is pain or its various modifications, such as malaise and discomfort, which are only pain in a more diffuse and less acute form. The sensation of pain is a purely mental phenomenon, whether it be due to organic disease or not, and it may be removed by purely mental means. Other symptoms also—such as paralysis of movement and loss of sensation, often found in hysteria—may be of mental origin and be caused entirely by inhibition of the will and of the attention. Even organic changes may be secondary to emotional disturbance, acting either directly or indirectly through the influence of the endocrine glands. The necessity for the modern clinician regarding every symptom from the mental point of view, as well as and quite as much as from the materialistic, is therefore obvious.

In the second place the value of psychotherapy and the range of its usefulness has now been found to be almost unlimited. This form of treatment has ever been successful in appropriate cases. It was the first form to be adopted by primitive man, it and it alone is almost exclusively referred to in the Bible, and it is the form of treatment the young child receives naturally from its mother when it injures itself. Neurologists have been slow in discovering its value owing to their pathological trend, but it has been practised by the psychiatrist for a century and more, when he was alleged to be doing nothing for his patients. The first medical man to refer to it pointedly was Pinel, when he described the value of moral treatment, and it has been practised in our mental hospitals by such men as Tuke, Conolly, Clouston, and many others. The form of treatment employed was not designated by them psycho-analysis or mental suggestion, nor given any other special name, but the individual attention which they gave to their patients and the personal influence they exercised over them by living amongst them, though not systematized or stereotyped in form or procedure, nor based on abstract speculations, was psychotherapy or mental healing pure and unalloyed, and was followed by excellent results.

Finally, the number of nervous cases now regarded as functional and not organic has increased enormously. There was a time when neurologists were so bound up in their materialistic conceptions and pathology that they looked with some pity on the psychiatrist who could not display under the microscope, brilliantly coloured by an aniline dye, the physical basis of the delusions or other symptoms of mania and melancholia. This was regarded of him as a reproach, yet after all he was right. The neurologist now also realizes that very many of his own cases are purely functional and mainly mental. The amount of good that can be done by him in the classical cases of sclerosis or softening of the nervous system is negligible in comparison with the benefits received in functional cases by mental means alone.

These considerations lead us with a convincing directness to the important part the psychiatrist ought to play in the treatment of functional nervous disease and all borderland cases, yet it cannot be said, for one reason or another, that he occupies the position he should. For example, how many of our large general hospitals have one such specialist on their staff? It has often been pointed out, and with truth, that the physicians of mental hospitals have suffered greatly through not being in closer

touch with the physicians, and particularly the neurologists, in our general hospitals, but there is a converse side to this picture, which is equally true. Have the neurologists not also suffered as greatly owing to their want of familiarity with psychiatry? How many of them have acquired any practical experience of it at all? I know of one very eminent neurologist who, when a young man, spent some time in a mental hospital in a subordinate position, and he has since told me again and again that he then gained the most valuable experience in his whole professional career. I need only refer in passing to the important part played by psychiatrists in the practical treatment of those suffering from war neuroses and psychoses as a result of their special experience in mental hospitals and their tact in the personal management of such difficult cases.

In the short time now at my disposal I will discuss three points of interest relating to borderland cases from the psychiatric side of the question. The first of these deals with the existence of mental depression and the possibility of committing suicide. No one who has not been responsible for the lives of patients suffering from melancholia has any conception of the seriousness of this risk, for practically every melancholic patient is a potential suicide at one stage or another of his illness. The risk, moreover, is greatest when the patient is least deranged—that is to say, during the early stages and during convalescence. He is then best able to seize opportunities, and is given most opportunities, of committing suicide, for he is then least carefully supervised. Melancholia is the commonest form of psychosis, it is the slightest departure from the normal, and it is the form which is most frequently treated out of a mental hospital. The melancholic patient is usually quiet; he can talk sensibly on subjects unrelated to his depressive ideas, and as he has some insight he often comes of his own accord for treatment. A patient suffering from melancholia is thus a typical borderland case, but the medical man who is treating it has under his care the most dangerous form of mental disorder that exists so far as danger to life is concerned. It is impossible here to enter into an account of the differential diagnosis of melancholia from other states of depression, and I would advise everyone not a psychiatrist for the sake of his own peace of mind to call one in for advice on this point if he is treating a depressed person, unless the case is an obvious one or he himself assumes that the patient is suicidal and takes the necessary precautions. Were I asked to deliver one lecture and one only on psychiatry, that lecture would be on melancholia and its treatment. Were my audience to forget all I said, with the exception of the one statement that practically every patient suffering from melancholia is a potential suicide at one stage of his illness or another, then my lecture would not have been given in vain. What adds to the distress of the tragedy of such a suicide is a knowledge of the fact that practically all patients suffering from melancholia who are neither senile nor diseased make good recoveries.

The next point I will discuss is the stage at which the patient is no longer a borderland case, but is across the border and could, if deemed expedient, be certified insane. Insanity, for the purpose of detention and treatment, is not defined by the English law, but if an insane person be detained and restrained, he must be certified. In Scotland a "lunatic" is defined, but, on the other hand, he may be detained and treated under certain conditions without being certified. The law is not primarily concerned with disease or its treatment as medicine is, but with conduct. If, however, the conduct be so affected by disease of the mind that the patient is unfit to enjoy complete liberty, we then have the medico-legal condition known as insanity. It is not possible here to describe all the varieties of insane conduct that may lead to certification. In melancholia we may have, for example, refusal to take food. Any remarks made by the patient to the effect that life was not worth living or that he would be better in his grave is so serious an indication of the danger of suicide, in view of the well-known symptoms of this disease, that it would be foolish to wait till the attempt on his life had actually taken place. Such patients, if certified, can still be kept under private care in England, and in Scotland they can be kept for six months in private houses or nursing homes without certification. They are, however, no longer true borderland cases.

I now come to my last point: a plea for the emancipation of the mental hospital and the introduction of a new status and a new era for it. The Act regulating the admission of patients into mental hospitals in Scotland is 65 years old, and that of England is quite as antiquated in spirit. These Acts were, no doubt, very suitable for an age in which *Hard Cash* was written, but they have outgrown their usefulness. They are no longer a blessing but a curse, and one that falls heaviest on the poor. Why should not borderland cases, cases of mental disorders and the psychoses in their early and curable stages, receive all the advantages of the accommodation and treatment given in our modern mental hospitals, from which they are at present debarred owing to the necessity of being previously certified a lunatic and legally committed? Private patients are, however, entering such mental hospitals as Craig House in greater numbers voluntarily than under certificate. They come at an earlier and more recoverable stage, one that corresponds closely to the borderland case. If the lunacy laws could be so amended that patients of small means, suffering from curable mental disorders, could also enter mental hospitals and receive early treatment without being certified lunatics, as patients enter general hospitals, and as the majority of private patients in Scotland paying the higher rates of board now do, then a new era would be introduced. Simple notification would provide these patients with all the legal protection that is now needed by them. The borderland, which after all is a geographical expression which depends for its existence not on medical or scientific views but on an artificial legal distinction, would disappear and our mental hospitals might then be regarded as true hospitals for the treatment of a special disease. Our mental patients might then come to them for treatment more readily and at an earlier stage, and might recover without being painfully conscious of a reproach which they believe at present attaches to them after certification.

DISCUSSION.

Dr. IVY MACKENZIE (Physician, Victoria Infirmary, Glasgow; Consulting Physician, Glasgow District Board of Control): There can scarcely be any consensus of opinion as to the character or nature of mental disorder symbolized in the term "borderland case." It is a matter of everyday experience that there is practically no ailment which, on its symptomatic side, does not present evidence of disorder of the nervous system. Acute and chronic infections, cardiac disease, rheumatism, pernicious anaemia, and arterial disease, are each, in individuals of peculiar neural disposition, prone to find expression in discomfiture which can best be explained on a neurological hypothesis. The nervous system is, in such cases, the component part of the individual which most obviously betrays the evidence of organic instability. But while for therapeutic purposes this aspect must be constantly kept in view, it would not be practical to use the term "mental" in this context.

If, however, we confine our attention to those varieties of disease which the alienists agree belong to the category of insanity, it is no less difficult to be precise as to the character of the case which is "borderland." There is a general and natural disposition to apply the term to the mild or incipient stages of what ultimately turn out to be the more gross types of alienation. Thus the initial stage of primary dementia or dementia praecox is frequently characterized by mentality and behaviour which, while to the experienced observer obviously indicative of grave disorder, is nevertheless so vague in its manifestations as to justify the designation "borderland." The term in such a case may not be a misnomer, but if it be taken to imply that those cases are suitable for special treatment, say, in observation wards or in special wards of a general hospital, then its practical application will end in disappointment. These may be compared and contrasted with such cases which on the surface present evidence of disorder often mild and equivocal, others with excitement characterized by excessive self-assertion, flighty ideation, and mildly delirious hallucinosis. These latter are definitely alienated, for the time being at least. Their conduct may be such as to be a source of possible disaster to themselves and discomfiture to their friends.

It may be, and frequently is, the case that the circumstances combined with the attitude and lack of insight in the patients leave no option in the matter or manner of treatment; in other words, it is often imperative that

they be certified for institutional treatment. Yet this represents a type of case which in the practical sense of the term is obviously "borderland." He is the subject of a transient excitement, the expression of a cyclic disturbance incident to causes or conditions so far unknown, but exhibiting to those who have the knowledge features which justify a good prognosis.

Take, again, another great class of patients, which for administrative purposes may be grouped under one heading —the senile and pre-senile insane. About 20 per cent. of all the insane cases in a large industrial area such as Glasgow come under this category. From the time of onset of the more pronounced mental symptoms till the period of death there is an interval of from three months to five years, and the majority die within eighteen months. The pathological basis of the disorder is to be found in senility or in premature arterial degeneration. In this case the process of somatic decay involves structures which are closely related to the groundwork of mentality. They have usually led useful and industrious lives, and to compel them to spend the remainder of their days among degenerates and lifelong lunatics with criminal propensities is to make a deliberate addition to the misfortunes to which the mentally afflicted are exposed. In a very real and practical sense many of these are "borderland" cases for which treatment outside of an asylum could quite well be provided. As a matter of fact, in Glasgow during the war provision was made in special wards with 100 beds for the treatment of these cases.

These considerations serve to emphasize the difficulty there is in practice, not to speak of theory, in segregating a special class of disease as "borderland cases." It is this special difficulty, however, which appears to me to offer a solution to the main problem. All mental cases, with few outstanding exceptions, should pass through observation wards. This may be done in Scotland, and in Glasgow about 1,000 cases pass through the observation wards each year. An opportunity is thus afforded of discriminating between those who are likely to recover soon and those in which asylum treatment is indicated. Toxic and hysterical states, the depressed and excited manifestations of *folie circulaire*, and other transient forms of mental aberration are treated successfully in many instances within the prescribed period of three months. Provided with means of this kind, the academic difficulty of defining a borderland case is obviated. The cases are there and must be dealt with. In the first instance they are observed and assorted. Some are certified for the asylum, others for institutions for defectives, others "boarded out," and others sent to institutions for senile cases. Where recovery is probable provision is made for retention and treatment. The wards, in addition to serving an administrative and therapeutic purpose, are also of great value to the police authorities in providing a means of solving some of the problems of the relation of mental disease to crime.

Although it has not been officially recognized by the Ministry of Pensions, who hand over their lunatics to the Poor Law, while pretending to deal with "borderland cases" themselves, the hospital has been a boon not only to pensioners but to pensioners' friends, who have repeatedly expressed their gratitude for what it has provided. I am far from suggesting that the arrangements in Glasgow are even approximately satisfactory. Encumbered by the restrictions of the Poor Law, there is no provision for treatment of patients except such as come under the technical designation of "pauper." To get rid of the term "lunatic" while retaining that of "pauper" is surely to halt at a stage where the progressive mind in medicine will refuse to rest. This is not the occasion on which to follow this argument in its details, but it is obvious to all interested in the subject that the struggle by the profession to emancipate the insane from the trammels of tradition will not be successful until the treatment of the mentally afflicted is carried out under conditions which place them, so far as hospital provision is concerned, in the same category as other sick members of the community.

The treatment of "borderland cases" is, I am convinced, in the first instance a matter for administrative reform, and this is so in spite of the heroic pretensions of psycho-analysts, psychotherapists, and others who only play on the fringe of the problem. The way for such reform must, in the first instance, be paved by legislative sanctions increasing the authority of the General Board of Control, which, in Scotland at any rate, has always pursued a progressive policy, and has earned thereby the gratitude and confidence of the profession. The General Board should have the power not only to authorize, and exercise a general supervision over, the treatment of mental cases in special clinics, but they should also be in a position to prevent the indiscriminate treatment of such cases in nursing homes. An extension of the facilities for general hospital treatment would in itself contribute in no small degree to a curtailment of mischief incident to the nursing home practice.

Whether the Poor Law authority is a body competent to develop the administrative, therapeutic, and educational possibilities inherent in any effective measure of reform is, to say the least of it, open to doubt; but when the question is raised, as it so often is, I always remember how much Glasgow owes to the intelligent and far-seeing policy of Mr. Motion, the late inspector of poor for the city. If only the reforms initiated under his administration were carried to their conclusion in the spirit in which he was actuated, I have no doubt whatever that the present problem of the borderland case would be in a large measure a question of the past.

Dr. Helen Boyle (Honorary Medical Officer, Lady Chichester Hospital, Hove) said: I have greatly enjoyed listening to Dr. Robertson's paper, and with his wealth of experience at Morningside and elsewhere it is invaluable, but perhaps I may be allowed to say a little because I see the matter from a somewhat different angle. My experience since 1905 at the Lady Chichester Hospital (for early recoverable nervous and borderland patients, with no certifiable patients at all) is that of cases at a much earlier stage than most of Dr. Robertson's, though no doubt he sees many early cases too. It is too large a subject to tackle thoroughly in a few minutes, but there are three points that I should like to call attention to.

1. The first point is the importance of unhappiness as an early symptom in the diagnosis of nervous and borderland patients. It is not normal for a man or woman to be unhappy for more than a short time, and it is one of the great needs of the times that this fact should be rubbed into the general public. If a person goes on being unhappy he should make up his mind to know the reason why. It is abnormal, unhealthy, and usually remediable. In the so-called "early" cases that we get we find that there is a history of unhappiness for months or years or sometimes almost a lifetime before they come in. It may be that their work is unsuitable or that there is a lack of it. One case I recall of a woman, an able forewoman and buyer before marriage, happy and energetic, who married a man absorbed in his business from breakfast to bedtime and consequently out nearly all day. She had a tiny house in the village, a maid and no children, and nothing to do. She suggested work, but it was considered "infra dig." and with a nice house and garden what more could she want? She broke down time after time, unhappy from having nothing to put her energies into: she needed work.

2. The second point I want to emphasize is the importance of using all the remedial means we possess, not only one of them, in treating these patients. The causes are almost always multiple, seldom if ever one alone. You may get heredity, faulty early environment and attitude of mind, the loss of a son in the war, and an attack of influenza all in the same case. It is like a chain with many links, and it is well to attack as many as possible at once; for instance, if the patient is under weight it is essential that this should be increased, for psycho-therapy is often useless until the general health improves. With increased weight psycho-therapy becomes easy and effective.

3. This brings me to the last point: that the things we most want are out-patient clinics and beds in connexion with general hospitals for "early" cases. We already have some excellent out-patient clinics, such as those at Oxford, Cambridge, and in connexion with some London hospitals, but I would urge the necessity of beds for this type of case in all general hospitals and clinics, more especially the teaching ones. Beds are often essential for treatment even in cases otherwise suitable for pure psycho-therapeutic methods. It is frequently useful for the mal-adjusted patient to get away from home in order to see the conditions in proper perspective. If you have

to readjust your relations to those you are living with, in the light of further knowledge, surely it is easier if you come back fresh to them. These wards or wings of hospitals should be run with entire avoidance of red tape, and it should be possible to obtain almost any physical and mental condition desired. The patients should be able to get up and go out, to go to cinemas, concerts, to shop or bathe; they should be able to have gardening, dancing, hydrotherapy, electricity, massage, suggestion, re-education, handwork, or any other treatment. We have a hospital magazine, a cricket team, a club night, and a chapel.

Moreover, there should be no compulsory detention of any kind or you will not get the very early cases. When recently in the United States seeing the best of their nervous and mental work I found both at the Phipps Clinic at Baltimore, in connexion with the Johns Hopkins University, and at the Boston Psychopathic connected with Harvard University, that compulsory detention, which enables them to take acute mental cases, is already beginning to have an effect in keeping out early cases. This is understandable.

Dr. Bedford Pierce (Medical Superintendent, The Retreat, York) spoke on the serious responsibility in dealing with suicidal patients, and concurred in the opinion that if supervision was undertaken it should be done thoroughly. He pointed out that in some cases with suicidal thoughts rigid supervision was actually injurious, and that some patients would not recover until the supervision was relaxed. The risk was great, and this was one of the great causes of anxiety for all engaged in that branch of medicine. In surgery risks were freely taken in the interest of patients, and in psychological medicine this was sometimes necessary. The question needed to be looked at from a changed point of view.

Dr. Bedford Pierce advocated the admission of voluntary boarders in the general hospitals, and believed their admission would be beneficial both for the patient and for the hospitals themselves. One serious difficulty in treatment was the question of expense. It seemed impossible to secure the nursing attention that was necessary without assistance from the public funds, as the cost was necessarily very large.

Dr. Alfred E. Carver (Physician, Birmingham and Midland Hospital for Diseases of the Nervous System) said: The difficulty is that the specialist does not, as a rule, see the patient early enough. By the time a case has reached the "borderline" or certifiable stage the mischief has already gone far. If only we can get our cases really early, the question of in-patient institutional treatment will rarely arise. It is precisely to his ordinary surroundings that we seek to adapt our patient, and it is better to do this, so far as possible, while the patient is in them and at his everyday work. Many of those whom we remove to an institution adapt themselves to life within it and may be discharged only to break down again very soon in their ordinary surroundings. For example, I have known cases of apparently cured melancholia commit suicide upon the very day of their return home.

I agree with Dr. Boyle that the term psychotherapy should be used in its most comprehensive sense, but the essential is that whatever method we apply it should be applied early. This can only come about when the general practitioner and the public recognize the early symptoms and the importance of treating them promptly. Such a common symptom as nervous dyspepsia is often treated for a long time merely by drugs until a large number of other anxiety symptoms have developed. It thus becomes firmly rooted and correspondingly difficult to remove. Eventually even it may set up chronic organic changes though originally psychogenic in nature.

For really early treatment we need no alteration in the lunacy law, and in my opinion it would be far better were the profession to concentrate their energies upon early recognition and treatment than upon the care of borderline—which are late—cases.

Dr. W. L. Ruxton (Physician, Lying-in Hospital, Newcastle-upon-Tyne), speaking on the difficulties of the physician who, whether for advice or certification, came first in contact with mental cases, advocated the extension of the voluntary system. He emphasized the difficulty of persuading patients to go voluntarily to recognized asylums, hence the necessity of separating the two establishments and having the voluntary establishment in healthy country and not town surroundings. He pointed out the very inadequate machinery and difficulties of certificates, which were not met by the emergency certificate. He regarded early melancholics who had any semblance of hallucinations of hearing as the most dangerous cases from the point of view of suicide.

Dr. Mary Sturge (Physician, Birmingham and Midland Hospital for Women) pointed out that the presence of many persons in the "borderland" was encouraged and maintained by such unrecognized and untreated conditions as post-nasal infection, displaced kidneys and pelvic organs. She instanced cases whose neurasthenic or mental condition was relieved by physical means rather than psychopathic.

1. A school teacher: thin, miserable and neurasthenic; had not worked for months; no nasal symptoms whatever, but a history of influenza a year ago. Nasal swab only slightly covered, but culture showed a triple infection, including the influenza bacillus and pneumococcus. There was marked improvement of mental outlook after the first dose of autogenous vaccine.

2. A missionary: quite unfit to return to India; kidney fixation performed by Billington method. The patient wrote subsequently in June, 1918, "I was miserable and depressed to the last degree for about two years. Since the kidney has been fixed in the right place I have felt no depression at all, and I am told I have an altogether different expression on my face."

3. A case of puerperal melancholia: Prompt return of patient's mind to its normal condition after reposition of retroflexed uterus. Previously the patient had been in a state of melancholia for several weeks.

Dr. James Middlemass (Medical Superintendent, Borough Mental Hospital, Ryhope, Sunderland) said: I take part in this discussion only because of the President's request, and not because I have special experience in borderland cases. I can speak only as it affects the superintendent of a mental hospital dealing with rate-paid patients. I have frequently had former patients come to the hospital and ask to be readmitted. Some of these I have been able to admit because they were certifiable, but others who were not certifiable but were still so-called borderland cases I have been unable to do anything for except to give some useful advice. I think it is a defect in our means of dealing with these and similar cases that we cannot give them institutional treatment. It is to be hoped that when any amendment is made in the existing Lunacy Acts this important matter will not be forgotten. Such provisions for the admission of voluntary patients into ordinary mental institutions already exist in some Continental countries and also notably in the Union of South Africa. The existence of these provisions shows that the legal difficulties are not insuperable.

The next point is the desirability for the provision of some assistance in studying and regulating the environment of these borderland cases. In many instances it is found that the chief exciting factor in bringing on the threatened mental breakdown is one of environment. A man may be working at an uncongenial occupation or one for which he is naturally unfitted. A woman may have a drunken husband and his treatment of her may be such as to make her depressed, nervous, and sleepless. A change to another occupation or persuading the husband to take the pledge and be sober may be the best line of treatment for these cases. We may with advantage study the lines on which "social service" is being developed in America, as it seems to me it is on these lines that great good may be done in the way of prevention of mental breakdown.

The last point I would refer to is the good that may follow the visit of former and recovered patients to the hospitals where they have recovered. I always encourage this, and in many instances have seen great good result. It is a form of psychotherapy of great value.

Dr. J. Mackie Whyte (Physician, Dundee Royal Infirmary) referred to the practical experience which he

had had for some years in the treatment of early cases of mental disease in the Dundee Royal Infirmary. The experiment was on a somewhat small scale, but proved in many ways of value. On the whole, he thought such cases should be treated in separate wards, or a special building attached to the general hospital, and the greatest stress should be laid on the quality of the nursing. As to cases of suicide, they could not reckon on cowardice as a restraining factor in mental cases.

Dr. W. R. Dawson (Dublin; Government Inspector of Lunatics in Ireland) said: The prevailing general impression from this interesting and useful discussion is that the methods of treatment urged by the speakers are in general those which have been used in asylum practice for the last thirty years, and are to be found in the early editions of Sir Thomas Clouston's *Manual of Mental Diseases*, which seems to indicate that the methods are being rediscovered by the general medical profession. In this connexion it must be urged that in staffing mental wards or departments in connexion with general hospitals—which should certainly be established—medical men with asylum experience should be appointed, psychiatry being of all branches of medicine that most dependent at present on clinical experience. In speaking of departments for mental cases in general hospitals it may be pointed out that hospital wards can take a comparatively small class of cases, and if all the various methods of treatment touched on by Dr. Boyle are to be tried, there would have to be a separate department of the hospital.

As to the suicidal period in melancholia, it may be pointed out that, in addition to the early stage of the disease, another period which requires care is just before full recovery, when the patient is well enough to appreciate his position.

Dr. W. H. Bryce (Fife) pointed out the width of the borderland, and that on the nervous side of this borderland there were many cases which were potentially suicidal; hence a certain amount of risk had to be taken. He discussed the physical element present in many cases, and pointed out how a physical illness or a shell concussion seemed to liberate the psychical element. In some cases it was difficult to decide which was the determining factor. He emphasized the necessity of treating every aspect of the case—for example, by lavage, vaccines, etc., for colitis, as well as by psychotherapy for the accompanying depression or morbid ideas. Physical treatment, he concluded, should therefore be combined with the psychotherapeutic measures.

The President of the Section referred, in a brief speech, to the deplorable frequency with which cases of acute melancholia were labelled "neurasthenia" or "hysteria," and to the unfortunate results which ensued.

In a short reply Professor G. M. Robertson wished to confirm what the President had said as to the great mistake of calling melancholia hysteria or neurasthenia. The suicidal tendency coloured the whole picture. He believed that nearly all these cases recovered, in spite of a close supervision. After alluding to the close relation obtaining between pain and unhappiness, he emphasized anew the multiple etiological factors in borderland cases, and concluded by an appeal for the study of happiness in human life.

THE BLOOD AND THE NERVOUS DIATHESIS.

BY

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The structure of the neuron and its mode of functioning depend upon two factors, (*a*) its innate potentialities, as determined by heredity, and (*b*) the influences brought to bear upon it from without, or, in other words, the environment. These environmental influences fall under two heads: the plasmic, operating through the perineuronic lymph (also in the main determined by heredity), and the non-plasmic—for example, mechanical stimuli acting on the sensory end-organs, and the action of one neuron on another at the synaptic junctions.

The Influence of the Plasmic Environment upon the Evolution of the Neuron.

A consideration of the circumstances which determine the evolution and dissolution of the neuron (or other cell) makes it evident that its entire career is as much the outcome of environmental influences (peculiar for each type of neuron) as of innate impulse, and that its development is indeed not so much due to a spontaneous impulse operating, unaided, from within, as to its capacity to be moulded in definite ways by specific environmental influences. Further, the environment of the neuron, notably its plasmic environment, is chiefly responsible for whatever disease may affect it; even its final senile decay results as much from extrinsic as from intrinsic causes.

Normal development of the nervous system implies that the individual neurons shall be bathed in healthy plasma containing a due supply of nutritive materials, salts, vitamins and endocrines, and a minimum of noxious substances. Faultiness in any of these respects may seriously interfere with the normal development of the nervous system. Consider the influence of endocrine activity alone. This is shown by the phenomena of cretinism and hypopituitarism as well as by the effects of removing the ovaries and testes in early life. The differences in the nervous organization of the man and the woman are mainly due to the differences in the nature of the endocrines yielded by these and kindred structures.

The nervous system does not long maintain the efficiency of early maturity. From (say) the age of 30 years onwards some deterioration, slight though it be, tends to take place with each succeeding year; and this proceeds with accelerated pace when the period of senescence is reached. This progressive deterioration is not a purely spontaneous process. It results from causes which are in the main extrinsic; it is largely due to plasmic influences operating upon individual neurons from without. If, on the attainment of maturity, the neuron continued to be bathed in healthy adolescent plasma it would tend to retain its powers in undiminished efficiency. Some degree of deterioration would, no doubt, set in even under such conditions, but the process of final decay would be long drawn out. The neuron does not, however, continue to be flushed with youthful plasma. This fluid from maturity onwards undergoes a steady alteration in composition, and there necessarily results a parallel alteration in the structure of the neuron. Deterioration, at first slow, proceeds more rapidly when the blood becomes senile, and the capillary circulation languishes as the result of cardiovascular degeneration. The neuron does not, that is to say, become senile wholly from intrinsic spontaneous causes, but has senility—in great measure—thrust upon it by the plasma. In short, the nervous system becomes senile not so much by a process of wearing out as by one of suicide on the part of the organism at large.

Influence of the Plasmic Environment in Checking the Evolution of the Neuron.

Abnormal development of the nervous system induced through the plasma may be due to inborn or acquired defects of the plasma. Inborn plasmic defects are such as result from some defect in the germinal rudiment of a plasma-forming organ, such as the pituitary body, thyroid gland, ovary, testis, adrenal gland, or digestive organ. It is clear that, given defects of this kind, the nervous system, not being furnished with the normal plasmic constituents, will fail to develop properly, even though its germinal rudiment be normal. We shall then have to do with a defectively organized nervous system which, though not the result of an inherent defect in that system, is nevertheless due to causes inherent in the organism, causes which take their origin in the zygote or fertilized ovum.

The inheritance of nervous diseases, both organic and functional, is, in my belief, due far more to the inheritance of plasmic defects than of a primary nervous defect. We must not, however, forget in this connexion that the nervous system itself controls the elaboration, purification, and circulation of the plasma, and thus indirectly influences the environment of the cells of the body politic, including the neurons themselves.

Acquired plasmic defects are such as result from unhealthy conditions of life. If the conditions of life be persistently bad, the plasma will be persistently bad, and the nervous system, even though initially normal, will not

develop normally. Thus rickets, rheumatism, and chronic intestinal disorders in children are apt to be accompanied by nervous symptoms; from which we may fairly draw the inference that the condition of plasma characteristic of each of these affections necessarily interferes with the normal development of the nervous system.

Influence of the Plasmic Environment in Causing Dissolution of the Neuron.

With the exception of genuine senile degeneration, in which some degree of spontaneity may be admitted, degeneration never occurs spontaneously in a normally evolved cell, be it a neuron or any other. The vast majority of organic diseases of the nervous system are produced through the plasma, either in consequence of deficient supply (such as may result from vascular disease) or faulty constitution. It is sufficient to mention the toxaemias, whether of metabolic, bacterial, protozoic (as in the case of syphilis), or extraneous origin (alcohol, lead).

Functional Reaction of Neurons to their Plasmic Environment.

Every variety of cell responds specifically to its plasmic environment: the muscle cell responds in one way, the the gland cell in another way, the nerve cell differently from either; and, again, each variety of these cells has its own specific reaction. The exquisite sensitiveness of neurons to chemical influences is well shown by the action of drugs; most of these produce their effects essentially through the nervous system. This is obviously the case with drugs which act as anaesthetics, hypnotics, anodynes, nerve sedatives, and nerve tonics; but it is also largely true of other drugs, such as purgatives, emetics, anti-emetics, sudorifics, diuretics, and drugs acting upon the cardio-vascular system; moreover, practically all the poisons, with the exception of the corrosives and metallic irritants, cause death by their direct action upon the nervous system.

In addition to its nutrient constituents the blood normally contains a number of substances having an action similar to that of drugs, and playing a necessary part in the normal functioning of the cells. Many of them exercise a specific action upon the neurons, and there is no doubt that they play a considerable part in controlling the activities of the nervous system.

Nerve Stimulants and Nerve Depressants.

We may roughly classify these substances into nerve stimulants and nerve depressants. When the former predominate there is a feeling of well-being, or even of exhilaration. When the latter predominate there is depression, which may vary from a slight fit of the "blues" to the deepest melancholy.

The congenital craving for alcohol and other drugs I attribute to a defect in respect of these substances, either to a deficiency of nerve stimulants or an excess of nerve depressants. Mankind all the world over shows a liking for stimulants in one form or another, and not infrequently the liking amounts to a veritable craving. When the blood is well provided with nerve stimulants and not overcharged with nerve depressants, there is no craving for extraneous stimulants, such as alcohol, tea, or coffee; but when it is defective in the one or surcharged with the other, there is felt the desire for the glass of wine or the cup of tea.

Those who display a congenital disposition to drug cravings, alcoholic or other, come of a stock in which neuroses and psychoses, including insanity, are rampant. I hold that in all these congenital taints it is the blood which is essentially at fault.

The organism stands in need of nerve stimulants—substances having a stimulating, bracing effect upon the nervous system. Not only do certain endocrine glands yield such stimulants, but stimulants are likewise ingested with the food, which is indeed often specially chosen for its stimulating properties. Others, I suggest, are generated within the organism by the metabolism of the tissues at large.

One can hardly doubt that the exhilaration, amounting at times to a veritable intoxication, experienced by young children in abounding health, is due to the action of nerve stimulants, endocrines or otherwise. I may here draw attention to the fact that there is strong evidence that substances having a stimulating and tonic action upon the nervous system are generated in certain diseases. Thus, in general paralysis of the insane the patient may exhibit all the features of mild intoxication. Again, it is not uncommon for the sufferer from migraine to feel preternaturally well the day before his attack, as though he were under the influence of some nervine tonic having an effect similar to that of strychnine.

There is, on the other hand, abundant evidence that nerve depressants may exist in the blood. In normal health they are at a minimum, but in disease they may be present in sufficient quantity to give rise to a variety of symptoms, such as irritability and mental depression, which may culminate in actual insanity. It is well known that a feeling of malaise accompanied by mental depression may sometimes be relieved by a blue pill and black draught, and that periodic attacks of bad breath and naughtiness in a child may be removed by a dose of medicine, such as Gregory's powder.

Other instances of the influence of stimulants or depressants on the nervous system causing morbid symptoms are: the irritability of the gouty man, the coma and convulsions of uraemia, the vomiting of acidosis, the coma of diabetes, the irritability and convulsions of rickets, the delirium and coma of malignant jaundice, and the numerous varieties of functional insanity.

Source of the Plasmic Substances which Influence the Nervous System.

These substances are derived from three main sources:

(*a*) From endocrine glands. Some, such as the thyroid, have a stimulating action, causing such effects as flushing, tachycardia, perspiration. The parathyroids are thought to yield a substance having an inhibitory action on the motor neurons, inasmuch as the removal of these glands leads to tetany. Extract of the posterior portion of the pituitary body causes, when injected into the blood, a generalized vasomotor constriction and localized dilatation of the intrarenal arterioles. Adrenaline has a curious selective action on certain portions of the autonomic system, causing, for example, a generalized vasomotor constriction, dilatation of the pupils, contraction of the sphincters of the intestines and bladder, and relaxation of the propulsive muscles of both these organs. The influence of testicular activity is shown by the remarkable nervous phenomena associated with the rut; the rutting animal is intensely erotic and dangerously combative, and a similar combative spirit is displayed by the mammalian mother when called upon to protect her young. Here also the altered emotional tone is hormonically induced.

(*b*) From the digestion of food and the metabolism of the tissues generally. Some of these are stimulating, others depressing.

(*c*) From the food. Most natural foods, vegetable as well as animal, contain nerve stimulants. Animal foods are more stimulating than vegetable foods, and some animal foods (for instance, butcher's meat) more stimulating than others (for instance, fish). Of vegetable foods, maize, beans, and oats are more stimulating than grass. All vegetable feeding animals exercise a discriminating choice in their search for food, and seem to show a predilection for the most stimulating varieties. Man shows his desire for stimulating foods in his love of condiments—pepper, pickles, piquant sauces, and the like. Long before he learnt to brew alcohol he gathered stimulating herbs and berries and mixed them with his food. It was not until a comparatively late period in his history that man learnt to brew for himself stimulating beverages, such as tea, coffee, cocoa, and alcohol.

The Functional Nervous Disorders due to Morbid Plasma.

These may roughly be classified as follows:

(*a*) Those due to defects as regards substances furnished by endocrine glands. Among the symptoms thus arising are: the vomiting, exhaustion, and low blood pressure of Addison's disease; the palpitation, rapid pulse, and increased perspiraton of Graves's disease; the apathy, slow pulse, and dry skin of myxoedema, the various nervous phenomena associated with hyper- and hypo-pituitarism, and the long array of nervous disturbances—flushing, rigors, sweatings, headache, depression, and the rest—connected with menstruation and the climacteric. It is

probable that many of the nervous phenomena of "shell shock," such as tachycardia, tremor, agitation, profuse perspiration, blue hands, are due to disturbed endocrine action, in which the thyroid gland figures prominently. Disordered activity of the endocrine glands is largely responsible for hysteria, "psychasthenia" in its various forms, borderland insanity, and, indeed, many forms of actual insanity. Sir Frederick Mott claims to have shown that a relation exists between dementia praecox and degeneration of the reproductive glands. When, some years ago, I came to the conclusion that senescence is in large measure a suicidal process wrought through the blood, I suspected that altered endocrine activity might figure largely in its causation. Recent observations tend to confirm this view.

(*b*) Those due to defects as regards substances furnished by tissues other than the endocrine glands. These defects cover a wide field. It is sufficient to refer to the nervous phenomena characteristic of uraemia, diabetic coma, and malignant jaundice.

(*c*) Those due to defects as regards substances furnished by digestive processes. Faulty digestion, whether in the stomach, liver, or bowel, leads to blood poisoning. We may speak of this as indigestion toxaemia. The poisons absorbed from the alimentary tube include not only those resulting from imperfectly elaborated foodstuffs, but also the products of bacterial activity produced within the tube. These indigestion toxaemias are responsible for a vast amount of functional nervous disturbance. A man with "good nerves" has generally a sound digestive system; he will tell you he can eat and drink anything without feeling the worse for it. On the other hand, the habitual sufferer from indigestion is generally nervy.

Among the functional nervous disturbances which may be set up by indigestion toxaemia are: headache, tinnitus, giddiness, and other morbid cephalic sensations too numerous to mention; irritability, mental depression, nervousness, drowsiness, insomnia, disturbed sleep, torpid sleep, bad dreams, lassitude, weakness, tremors, twitchings, convulsions, widely scattered pains and other dysaesthesias, palpitation, flushing, shivering, and sweating.

(*d*) Those due to nerve poisons resulting from the invasion of the tissues by micro-organisms such as those which produce the infectious fevers. Such are headache and other pains, giddiness, tinnitus, deafness, blindness, hallucinations, delirium, stupor, coma, insanity, rigors, twitchings, convulsions, rigidity, flushing, sweating, dry skin, tachycardia, nausea, vomiting, and diarrhoea.

(*e*) Those due to nerve poisons introduced from without. These include drugs, alcohol, and such poisons as those which cause pellagra, ergotism, and botulism. They may give rise to all the symptoms already mentioned.

It is noteworthy that drugs can induce most of the symptoms met with in the insane—not only depression, excitement, delusions, and incoherence, but such subtle effects as a rapid flow of ideas, and an apparent lengthening of time and widening of space. Of interest in this connexion is the fact that large quantities of alcohol have much the same functional effects as those observed in general paralysis of the insane.

The Influence of the Blood on the Feelings.

I have incidentally referred to the influence of the blood on the feelings. That influence may now be considered more particularly. Under the term "feelings" I include the sensations and the emotions. The peri-neuronic lymph plays as it were upon the mind-organ, either upon the grey matter directly or upon the sensory end-organs—which constitute a kind of psychic keyboard—and by virtue of its manifold and ever-changing constituents causes the feelings to be modified in an infinite variety of ways. The following brief summary indicates some of the more important effects of the plasma on the sensations and emotions:

(*a*) The special sensations. Functional blindness from uraemia, teichopsiae and scotomata in migraine, deafness and tinnitus in toxaemias.

(*b*) Other sensations. Pains, general or local, in the toxaemias of febrile diseases, neuralgia in anaemia, headache and other morbid cephalic sensations (sensations of pressure, heaviness, lightness, bursting, and irritation) induced by the blood states peculiar to the climacteric, pruritus and cutaneous dysaesthesias (numbness, tingling, burning), muscular dysaesthesia—for example, fidgetiness.

(*c*) The appetites. Thirst, hunger, eroticism, sleepiness, drug craving.

(*d*) The panaesthesia. The feeling of wellness or illness, of energy or fatigue.

(*e*) The emotions. The blood exercises a profound influence on the emotional nature. It may, as we have seen, give rise to a pleasurable or painful panaesthesia. Now the former predisposes to pleasant emotions, the latter to unpleasant emotions. A tired man is apt to be irritable; after he has been refreshed by food he is disposed to more pleasing emotions. A pleasurable panaesthesia, especially the sense of exuberant well-being, tends to call forth joyousness and to foster a belief in self; it constitutes the fundamental psychic characteristic of the megalomaniac, whether as met with in everyday life or in the asylum. A painful panaesthesia in the shape of profound malaise tends, on the other hand, to evoke a feeling of gloom and self-distrust.

The blood may exercise a more specific influence on the emotions. Consider the apathy of the myxoedematous patient, the intense nervousness and agitation of the sufferer from Graves's disease, the violent emotionalism exhibited at the period of the rut, the altered emotional tone at the time of puberty, at the menstrual epoch and the climacteric, the irritability of the naughty child with the bad breath, or of the gouty man on the eve of his attack, the elation produced by alcohol, and the peculiar emotional effects of certain drugs such as cannabis indica. The emotional effects of alcohol are manifold; it may make a shy man bold, a reserved man expansive, a mild man combative, a depressed man gay, a surly man genial, a cold man ardent, a close man generous. There is, indeed, hardly any limit to the emotional effects which may be wrought through the medium of the blood; and we are driven to the conclusion that the blood plays a preponderating part in determining mental temperament.

Not only is it possible to produce crude emotional effects through the blood, but such subtle emotional states as shyness and modesty, and changes in ethical feeling. Dr. Gordon Holmes tells of a young woman who in consequence of a growth forming in one adrenal gland took on pronounced masculine features, physical and mental. Men lost all attraction they had had for her, and all sense of feminine modesty disappeared. On the removal of the growth she reverted physically and mentally to her normal feminine condition, her interest in the opposite sex returned, and with it her maidenly modesty.

As a further instance of the specific influence of the endocrine glands on the emotional nature, I may mention the case of a boy of 16 who, after an attack of mumps, suddenly developed the symptoms of hypopituitarism. In the course of a few weeks he increased 3 st. in weight, developed an inordinate liking for sweets and cigarettes, and from being a straightforward lad took to deceiving his mother in all sorts of ways.

Mental Temperament the Root Factor in the Causation of the Minor Psychoses.

Under the term "minor psychoses" I include such affections as hysteria, anxiety neurosis, morbid fears, hypochondria—in fact, all those psychoses which have excited so great attention among psycho-therapeutists within recent years. *The root factor in the causation of these affections is an innate peculiarity of temperament.* Persons who are morbidly liable to them—all are in some degree disposed to them—are endowed with a peculiar mental temperament. They *feel differently* from normal persons, and, seeing that mental temperament is largely determined by the blood, it follows that the diseases in question are largely induced through the blood.

In order to understand the close relation between mental temperament and mental disease we must bear in mind that the entire mental personality is built up around feeling; initially, mind is, indeed, nothing but feeling. Consider, for instance, the influence of feeling on conduct and thought.

The Influence of the Feeling on Conduct.

Our feelings are our psycho-motors; their purpose is to adapt the organism to its environment by means of the

skeletal muscular system. Pleasurable feelings prompt to beneficial activities—the endeavour toward; unpleasant feelings prompt to the avoidance of hurtful activities—the endeavour fromward. This driving or "conative" function of feeling tone constitutes the mainspring of consciously initiated activities throughout the entire animal kingdom, be the feeling a crude sensation, such as hunger, a crude emotion such as fear, or so subtle an emotional state as that which we term conscience.

Instances of psycho-motor activity. A flash of light causes blinking, tickling the nose causes sneezing, irritation of the skin causes scratching; a feeling of pent-up energy prompts to muscular activity; in certain affections of the nervous system, such as mania and hysteria, it may lead to violent outbreaks. The feeling of fatigue, on the other hand, impels to beneficent rest.

Hunger prompts to the food quest—selection being carried on by means of taste and smell, both of which are richly endowed with feeling tone—while the enormous motive power of the reproductive instinct is well known. The impelling power of emotional feeling tone is well illustrated by fear and anger—the one impels to flight or concealment, the other to the violent overcoming of an impediment in the way of conative promptings. As regards the other primitive emotions, disgust prompts to avoidance, curiosity to investigation, negative self-feeling to submissiveness, positive self-feeling to a masterly attitude, tender feeling to altruistic behaviour.

The Influence of the Feelings on the Thought.

When the thoughts are left to pursue a random course they are very largely determined by the feelings of the moment. The hungry man thinks of his next meal, the erotic man has erotic thoughts, the fearful man thinks of the object of his dread, the vindictive man resolves schemes of revenge, the man inflated with ambition lays plans for all sorts of impracticable schemes. The melancholic dwells upon his wretchedness, his incompetence, his unworthiness. The inflated self-assurance of the general paralytic begets corresponding thoughts.

Of great significance in regard to the influence of the feelings on the thoughts is their power not only to beget but to hold the thoughts pertaining to them. Every thought is suffused with a certain amount of feeling tone, and the more highly it is coloured with feeling the more does it obtrude itself. Imperative and fixed ideas are in large measure the result of the morbid intensity of the feeling which generate and sustain them.

The Influence of the Blood Plasma on Mental Temperament.

A person's mental temperament or disposition may be defined as the sum total of his emotional dispositions. We have seen that the blood plasma influences both the sensations and the emotions, and this prepares us for the conclusion that it plays a large part in determining mental temperament. What may be termed the habitual constitution of the blood is peculiar for each individual, and is largely responsible for the habitual feeling note of each. The difference in the feeling note of different persons is, no doubt, in part due to differences in the nervous organ played upon, but I can have little doubt that it is in the main due to differences in blood constitution. I believe that if two persons were to exchange bloods they would in large degree exchange temperaments, and that such changes in temperament as characterize the successive phases of the vital cycle are in the main determined by the blood; that if the blood of an adolescent became senile he would feel like an old person, and that if the blood of an old person became adolescent he would feel young again, although the damaged instrument would not yield quite the same tuneful music as of old.

On the same lines we may explain the differences of racial temperament, as illustrated by the Celt and the Teuton, the Negro and the Mongol; as also the striking temperamental differences observed in the different species of dog—for instance, between the Aberdeen terrier and the spaniel, or again between the chow and the pekinese.

While feelings—largely initiated through the blood—beget thoughts, thoughts may on their part beget feelings; good news may cause intense joy, bad news intense misery. But even here the influence of the blood has to be taken into account. In the first place the manner in which a person responds to good or bad news depends upon his mental temperament, which, again, is largely dependent upon the blood. It has in the next place to be remembered that the influence of thought on feeling may to a large extent be brought about through the blood, notably through the medium of internal secretions: thus bad news, by exciting fear, may liberate secretions the effect of which is to cause a depression of bodily activity, whereas good news, by exciting joyful emotion, may release secretions having the opposite effect, and in each case the altered emotional state may be sustained by the altered state of the blood.

In insisting upon the important part played by the blood in the genesis of the neuro-psychoses I am not contending that psychic factors, factors making a direct mental appeal, take no part in their causation, nor that psychic means are wholly unavailing in their treatment; but I do contend that psychic treatment is impotent to alter the morbid emotional state which is the essential etiological factor in the more malignant forms of these disorders—those, I mean, which break out under the most favourable mental environment—for no mental treatment is capable of rectifying the peculiar condition of the blood which is responsible for it. This can only be done by material means. Who will engage to correct by psychic means the morbid emotionality of the sufferer from Graves's disease, myxoedema, or chronic alcoholism? Who, again, will engage to change the inborn temperament which is mainly responsible for the more intense form of hysteria, hypochondria, or anxiety neurosis? Patients thus afflicted are from the very beginning endowed with a peculiar mental temperament.

A due consideration of the facts and arguments adduced in this paper brings home to the mind the preponderating influence of the blood in the causation and treatment of the neuroses and psychoses.

Let the neurologist and psychiatrist concentrate their attention on the blood.

SOME POINTS IN THE MANAGEMENT AND TREATMENT OF PARAPLEGIA.

BY

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IT can be said with justice that the general care of paraplegic patients is often allowed to be determined and carried out by the nurse without the necessary supervision that its importance demands. The physician is apt to focus his attention too exclusively on the treatment of the pathological process underlying the lesion of the spinal cord or cauda equina, and to forget that the life of his patient largely depends upon the prevention of septic complications. A discussion on the management of paraplegic patients may therefore serve some useful purpose even if it only revives and brings into proper perspective knowledge much of which is already common property. In a short paper it is impossible to deal with more than a few outstanding points in relation to the general treatment of severe paraplegia, and I propose to confine the discussion to the care of the skin, the paralysed bladder and rectum, and the general health of the patient.

The Paralysed Bladder and Rectum.

With the onset of severe paraplegia urine and faeces are retained from atonic paralysis of the detrusor muscle of the bladder and large bowel and tonic contraction of the vesical and anal sphincters. The period of retention lasts, as a rule, in the case of spinal lesions, for two to three weeks, but where the lesion involves the sacral nerve roots it may persist for over a year. Under favourable conditions, however, retention is sooner or later followed by periodic micturition and defaecation, each evacuation being the result of active contraction of the detrusor with simultaneous relaxation of the sphincter. At first the activity of the vesical and rectal muscles is feeble, and a proportion only of the urinary and faecal contents is expelled; but in the absence of complications the periodic involuntary action of the bladder and rectum within a few weeks may become perfect, as has been demonstrated by experimental measurement.

It is during the stage of retention of urine that severe urinary sepsis, the commonest cause of fatal toxaemia, is most liable to develop and, if present, difficult to control. Even when periodic micturition has begun the danger is still great so long as each motor act is ineffective in emptying the bladder completely. Residual urine rapidly decomposes and therefore must be withdrawn by catheterization, an operation which is never quite free from the risk of introduction of pyogenic organisms. It is only when recovery of the bladder has reached the stage at which contraction of its muscular wall expels all the contained fluid and artificial drainage is no longer required that the period of relative safety from severe infection of the urinary tract has been reached. Bearing this in mind, what form of local treatment for the bladder should be adopted until automatic micturition has become complete? The following requirements are essential:

1. *Evacuation of all the urine in the bladder at least every six hours by a method which, as far as possible, minimizes the risk of external infection.* It is often claimed that urine will remain sterile if instruments are not introduced into the bladder. Those who hold this view advocate that evacuation should be brought about by either allowing the urine to force open the sphincter and overflow from the distended bladder or by manual expression through the lower abdominal wall at regular intervals. Clinical experience, however, agrees with experimental evidence that such methods court disaster and should not be employed. Paralysed bladders, even in the absence of catheterization, are always infected with pyogenic organisms, which probably travel in the blood and lymphatic streams from the intestines and elsewhere. But provided that urine is not allowed to remain in the bladder for more than a few hours and irrigation is systematically carried out, inflammation of the vesical mucosa may never become severe. These conditions, however, are not fulfilled by the methods for drainage we have just been considering.

Distension of the bladder must also be avoided for various reasons. In the first place, the rapidity with which pyelitis and pyelonephritis often develop after prolonged distension of a paralysed bladder, and the results of experimental investigation show that back pressure of urine along the ureters has a deleterious effect on the kidneys, and may be quickly followed by the onset of septic nephritis. Second, stretching of the bladder wall appears to lower its resistance to organismal invasion. Third, vesical distension delays the onset of automatic micturition, and, if prolonged so that the detrusor muscle is seriously injured, may permanently prevent its appearance in cases of severe paraplegia.

These considerations therefore show that it is impossible to avoid the use of instrumental methods of drainage if accumulation of stale urine in the bladder and stretching of the detrusor muscle is to be prevented. Either of two methods can be employed with comparative safety provided that strict precautions are taken against contamination of urine in the bladder. Both depend upon catheterization per urethram, but in one the drainage is continuous and in the other it is intermittent.

Continuous drainage by a tied-in cathether, when Kidd's[1] technique is followed, is probably the best method for emptying the paralysed bladder. It must, however, be carried out by the doctor himself, and on no account be left to the vagaries of a male nurse. After having carefully cleansed the prepuce and glans penis and washed out the urethra, a sterile coudé gum-elastic catheter is passed along the urethra until about an inch of the instrument lies within the bladder. It is then anchored by strips of silk attached to the penis by adhesive strapping and to a safety pin which has been boiled and passed through the extra-urethral portion of the catheter. The urine is usually caught in a glass urinal, which must be kept scrupulously clean. But if the lower limbs are being periodically convulsed by vigorous flexor-adductor spasms, which tilt up the urinal and so cause wet beds, or if the patient is getting about in a wheel-chair, it is better to plug the catheter with a wooden stopper which can be removed every two or three hours by the patient himself to allow the urine to drain off. The catheter is left *in situ* for three or four days, at the end of which time it is removed, cleansed, boiled, and then reinserted.

The second method of drainage—that of periodic catheterization—has the disadvantage over the tied-in catheter in that, because the operation of inserting the instrument into the bladder is carried out more frequently, the risk of infection from external sources is increased. But if due care is exercised serious trouble need not arise. To ensure against stretching of the bladder wall the urine should be drawn off at regular intervals of not longer than six hours.

The safety of either of these methods for evacuation of urine depends upon the strictest attention to cleanliness. Preparatory to catheterization all vessels—bowls for solutions, urinals, etc.—ought to be boiled, and the parts surrounding the urethral orifice must be covered with clean and preferably sterile towels. Adequate cleansing of the penis, especially the glans and prepuce, is very important, and the urethra must invariably be washed out—a measure which is too often neglected. For this irrigation the most convenient apparatus is a glass douche bottle containing a solution of oxycyanide of mercury 1 in 4,000 suspended about two feet above the patient. Rubber tubing connects the bottle with a glass nozzle the end of which fits the orifice of the urethra. The stream of fluid is controlled by clipping the rubber tube. The posterior part of the penile urethra should be compressed between the finger and thumb in order to prevent the passage of fluid into the bladder.

The hands of the operator must be washed as carefully as for a surgical operation, and sterilized rubber gloves ought to be used in passing the catheter.

2. *Irrigation of the bladder.* In addition to effective drainage of the bladder, irrigation should be carried out night and morning. The chief purpose of lavage is to remove any sediment that may have collected in the bladder, and although it is preferable to use fluids with antiseptic properties they must be non-irritating. It is safe to employ oxycyanide of mercury 1 in 4,000, potassium permanganate 1 in 4,000, or a half-saturated solution of boric acid. The boric acid solution heated to about 105° F. is particularly useful when the urine is alkaline, as it dissolves the phosphatic débris which under such circumstances is often deposited on the mucosa.

When irrigation is first carried out, in order to avoid stretching the muscle, the amount of fluid which the bladder can hold under the least pressure should be ascertained and never exceeded. The fluid should be run into the bladder under little pressure, best through a short funnel inserted directly into the catheter. When the stage in recovery is reached at which an appropriate quantity of urine in the bladder excites contraction of the detrusor muscle much can be done by the exercise of this function to hasten the development of automatic micturition. For example, when during the process of irrigation the column of fluid in the glass funnel begins to rise the bladder should be allowed to evacuate as much of its contents as possible against the least head of pressure. At first a proportion only of the contained fluid will be expelled by the bladder in this way, and the residuum must be forced out by pressure into the pelvis through the lower abdominal wall. Sometimes the vesical reaction can be originated and strengthened by artificial means. For example, in certain cases of spastic paraplegia associated with flexor spasms of the lower limbs active contraction of the bladder is facilitated by extravesical stimulation. Thus a bladder which by itself reacts to a fluid content of 600 c.cm. may be excited to contract by scratching the sole of the foot or the inner aspect of the thigh when it contains less than half this quantity of fluid. Or again, stimulation of this kind may so reinforce the activity of the detrusor that it succeeds in emptying the bladder completely when otherwise a residuum of fluid would have been left.

The practical advantage of these observations is evident; for in such cases the patient, even when deprived of direct voluntary control over his bladder, can, by breathing deeply or gently scratching the skin of his thighs, excite reflex micturition and increase the strength of the muscular contraction evoked, so that evacuation of urine will be complete.

3. *Regulation of the reaction of the urine to litmus.* When the bladder is paralysed the urine, in the majority of cases, has a tendency to become alkaline, and the alkaline form of cystitis is usually more difficult to control than the acid variety. Thus it is a good general rule to keep the

urine definitely but not too strongly acid by the administration of drugs by the mouth. The most convenient preparations for this purpose are acid sodium phosphate 30 to 60 grains and ammonium benzoate 15 to 30 grains, given in solution three or four times a day. Urotropin as a urinary antiseptic is, in my opinion, an overestimated drug. A great objection to its use is that it frequently leads to dyspepsia and loss of appetite, which is most undesirable in paraplegic patients.

As soon as automatic micturition is established, and has reached the stage at which complete evacuation of all contained urine occurs, artificial drainage can be stopped. Once this point in the clinical course has been passed one feels less anxious about urinary sepsis. Nevertheless, it is well to continue drug treatment, and a watch must be kept on the state of the bladder by examining the urine at least once a week. If, in spite of suitable precautions, acute cystitis and pyelitis should develop, appropriate treatment must at once be begun. For if inflammation of the urinary tract is allowed to become chronic acute exacerbations tend to recur at intervals of three or four weeks, and with involvement of the kidneys a fatal termination in uraemia is only a matter of time. Four-hourly irrigations of the bladder until the urine is clear should be combined with an attempt to change the reaction to litmus as quickly as possible by increasing the dose of acid sodium phosphate. Most patients will tolerate six drachms of the drug a day. If in severe and chronic cystitis lavage through a catheter is unsuccessful in cleansing the bladder, it may be beneficial to perform suprapubic cystotomy so that through-and-through irrigation can be carried out. Encourage the patient to drink large quantities of water to flush out his urinary passages, and if gastro-intestinal symptoms are troublesome exclude milk from his dietary. Vaccine therapy is, on the whole, disappointing in the treatment of cystitis.

A word in regard to the management of the paralysed bowel. As in the case of the bladder, care must be taken to prevent distension and ensure regular and complete evacuation of faeces. In general, aim at getting the bowel emptied once a day by giving an aperient at night and an enema in the morning. The amount of aperient should be adjusted to keep the contents of the rectum neither too firm nor too soft. Bulky laxatives, such as infusion of senna pods or a mixture of liquid paraffin and liquid extract of cascara, are best. When automatic defaecation has appeared an enema may be necessary only once in two days, and can often be entirely dispensed with.

The Prevention and Treatment of Bedsores.

One of the most grave complications which may follow gross lesions of the spinal cord and cauda equina is the formation of bedsores and the toxaemia which results from them. Several factors probably play a part in diminishing the vitality of the skin, and of these not the least important in the early stage of acute paraplegia is defective circulation in the paralysed portion of the body. Thus for the first two or three weeks after acute lesions of the cord, when reflex activity is depressed and the paralysed muscles are atonic, oedema tends to develop in dependent parts, the skin rapidly becomes discoloured if subjected to pressure, and venous thrombosis is not uncommon. Sluggish circulation is partly the result of impaired local vascular tonus, due to disturbed innervation, and partly the result of lack of that support to the vessels which is normally afforded by muscles in a state of contraction. Later, as tone in the muscles and reflex movements appear, the circulation in the lower limbs and the nutrition of the paralysed tissues improves; bedsores are then more easily combated. Bedsores are always more liable to develop in the presence of debilitating and febrile complications and when the skin is analgesic, for then abrasions and wounds fail to attract the patient's attention.

The prevention of bedsores is the nurse's province, but it is the duty of the physician to see that she knows how to carry out her work efficiently. In order that pressure on the paralysed parts is distributed equally the patient must be nursed on a water or air bed. Further, his position in bed must be altered several times a day, care being taken when he is placed on his side that one lower limb does not rest on the other. An overhanging rope or chain slung from a vertical support attached to the top of the bed is a necessary part of the nursing equipment. By pulling on it and raising himself in this way the patient can help the nurse to move his body, and in addition the exercise entailed is beneficial.

Sufficient time is not always expended in washing the skin, which should be well lathered with soap and water morning and evening. But removal of the dirt is not in itself sufficient. An indispensable part of the process is firm and prolonged friction with the palm of the hand to increase the vascularity of the skin. In giving instructions to the nurse this point ought to be insisted upon, and she should be told to pay particular attention to bony prominences. The whole operation is completed by dusting the skin with a bland powder.

Another of the nurse's duties for the prevention of bedsores is to see that the sheets are kept dry. The common causes of wet beds, spilling of urine, the involuntary evacuation of loose motions and profuse sweating, are most troublesome in cases where the lower limbs are the seat of spasmodic reflex movements. These when violent and flexor in form may excite reflex micturition, defaecation and sweating, upset the urinal and drag the unfortunate patient to and fro on the bed. Their control is mainly a question of prevention by removing the stimuli which cause them. Thus the bedclothes over the feet must be held up by a cage; undue tension on the flexor muscles should be prevented by placing a small pillow under the knees and supporting the feet with an adjustable foot-rest, and pressure of the urinal on the external genitals ought to be diminished as far as possible by suitable means.

In the event of bedsores developing their treatment must be persistent if septic absorption is to be minimized and healing promoted. Wounds of this kind are often regarded as hopeless and the treatment adopted is in consequence half-hearted. But although paralysed and insensitive tissues react feebly to infection they will heal in the majority of cases if they are assiduously treated by appropriate methods.

Care must be taken that the blood flow to and from the wound is not impeded by pressure on the surrounding tissues. This can be achieved by adjustment of the patient's position in bed and avoiding the use of rubber air-rings. For superficial clean sores stimulating dressings ought to be chosen, and dry gauze or gauze soaked in liq. aluminii acetatis 2 per cent., red lotion or a 2 per cent. aqueous solution of silver nitrate will meet this purpose. Bleeding from the surface of the wound, however, is an indication for the use of emollients such as equal parts of castor oil and zinc ointment or glycerin and compound tincture of benzoin. In the case of deep sloughing sores the dead tissues must be removed and the wounds thoroughly explored for hidden collections of pus. Excellent cleansing solutions for these wounds are eusol 1 in 4,000, liq. sodae chlorinatae (*B.P.*) and liq. aluminii acetatis 2 per cent. Fomentations are of value, but they must be frequently changed and used for not longer than a day at a time as they are likely to lead to the formation of pale, unhealthy granulations. A good general rule in the treatment of bedsores is to vary often the form of dressing and antiseptic fluid employed.

When a dirty sore situated over the trochanter of the femur or the ischial tuberosity has penetrated and infected the underlying bursa the sac must be excised, otherwise healing will not take place. Black blisters on the heels do best if the skin forming their outer walls is left as a covering for the wounds. They should be protected with clean dressings after the fluid has been removed through a small incision.

General Hygienic Treatment.

So far we have dealt only with the means by which the more dangerous complications of paraplegia can be guarded against and combated by local treatment. But the success of these measures depends primarily on the general vitality of the individual. Extensive paralysis of the body undoubtedly diminishes the vigour with which the body as a whole attempts to repel and react to infective agents. Therefore it is important to study how the health of paraplegic patients can be kept at the highest possible level.

Mentally and physically they thrive best in the open air, and whenever possible they should spend most or the whole of their time out of doors. For this class of case a

hospital built on sanatorium lines and surrounded with a large garden is the ideal, but even under ordinary hospital conditions a freer use could as a rule be made of the facilities for ventilating the wards.

Again, these patients are kept far too long lying flat in bed. As soon as the pathological process in the vertebral column or spinal cord has settled down they should be propped up in a sitting position for part of the day, and every encouragement given them to exercise the non-paralysed parts of their bodies. The therapeutic value of traction on an overhead rope has already been mentioned. With recovery of reflex functions other forms of exercise can be utilized. Patients who are unable to walk should, in the absence of bedsores and urinary sepsis, be made to wheel themselves about, first in a ward chair and later in a mechanical self-propelling chair. The latter especially is most valuable, for it allows them to get about by themselves in the open air. Some of my patients with severe lesions of the cord are in this way able to travel more than twenty miles in a day. A self-propelling chair, to be suitable for this purpose, must be light in weight, fitted with pneumatic tyres, a brake, and a three-speed gear. The pattern of the propelling mechanism is important, as it should provide for the exercise of the muscles of the trunk as well as those of the upper limbs. The best method of propulsion is by traction on a pair of upright handles, not simultaneously but alternately.

Lastly, the mental as well as the physical needs of the patient demand attention. Paraplegia is not only a chronic disorder but also one of the gravest incapacities with which we have to deal. Part of the trunk, the lower extremities, the bladder, rectum, and sexual functions may be permanently paralysed or their functions disturbed indefinitely. The patient may take some time to realize what this means, but sooner or later he is compelled to face the necessity for orientating himself anew to the every-day problems of life. Inability to cope with the situation inevitably results in depression and a desire to be free from the burden of living. He is in danger of becoming paralysed mentally as well as physically. Compulsory inactivity and dependence upon others weigh heavily upon him and make it necessary for the physician to devise ways and means by which the patient can gain a sense of comparative freedom and usefulness. Some form of work is essential, and it should have a definite aim in view if it is to be successful in holding the patient's interest and preventing morbid introspection.

In conclusion, I would plead for a wider realization of the duties of the physician in the care and management of paraplegic patients.

REFERENCE.

[1] F. Kidd: BRITISH MEDICAL JOURNAL, 1919, i, p. 397.

DISCUSSION.

Mr. McCRAE AITKEN (Surgeon, Military Orthopaedic Hospital, Shepherd's Bush) said: If a surgeon may be allowed to speak in this Section, I should like to refer to some practical points raised by Mr. Riddoch. Taking them in order, the first is the question of cleansing the penis before catheterization. A further precaution against the possible formation of an ulcer at the meatus with its attendant risk of infection of the bladder is to cover the penis with a sterile dressing between the periods of catheterization, thus rigidly excluding extraneous sources of sepsis as if dealing with a surgical wound.

Passing next to the question of bedsores, Mr. Riddoch referred to thorough washing with a lather of soap and water. I would deprecate the use of water after the skin has once been thoroughly cleaned, because it is too softening to the skin. My practice is to have the skin polished with soap only. The hand is covered with a dry linen glove or cloth which is rubbed with soap, and the skin is polished with this just as an ostler cleans a saddle. This removes all the sweat to which he referred, provides the friction necessary for the nutrition of the skin, and leaves the skin smooth and polished. With regard to the danger of beds wet with urine causing bedsores, it is better to treat the patient in a double Thomas frame. The patient lies on a sheepskin pad or saddle, and the hand covered with soap at once polishes the patient's skin and the saddle, without any necessity for turning or moving a patient with a spinal injury.

The next point is the question of flexor spasms of the lower limb. Spasm occurs not as the result of tension, but as the result of change of tension which immediately elicits a muscle reflex in hypertonic muscles. The use of the Thomas double frame enables the surgeon to control these muscles in extension, so that they cannot get into spasm so easily, and in about six weeks the balance between opposing muscles is so far established by controlling the strong flexors that the liability to flexor spasm is largely eliminated.

In the same connexion I would strongly oppose flexing the knees and hips by a pillow under the knees, as this position produces actual contractures which must be overcome perhaps only by operation before the patient can be put on his legs. It must be remembered that most cases who can sit up and have recovered control of bladder and rectum can usually be taught to walk with splints provided the lower limbs are straight, so that the patient can balance on them. For this reason I also dread the habitual use of the ward chair as liable to produce flexion deformities.

As an orthopaedic surgeon who finds these cases in cripple homes let me beseech you who are neurologists to prevent deformities which may afterwards cost us six months of hard work before we can begin to teach the patient to balance.

In reply, Dr. RIDDOCH again insisted that the first principle in the management of paraplegia is the prevention of complications. Bedsores, severe cystitis, and contracture deformities of the lower limbs are not, as is so often supposed, the inevitable consequence of grave spinal lesions; by the adoption of proper methods of nursing they can be prevented. The complications to which Mr. Aitken referred are the outcome of bad nursing, and should be looked upon as such.

Forcible stretching of the paralysed muscles in the stage of flaccidity as a means of preventing the appearance of spasmodic reflex movements and tonic contractures at the later stage of reflex activity is unjustifiable and unnecessary. Such treatment is based on wrong principles and leads to permanent injury of the muscles.

THE PHYSIOLOGY OF SYMPTOM PRODUCTION IN DISEASE AND INJURY OF THE NERVOUS SYSTEM.

BY

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IN spite of many notable advances in neurology within recent years, we still know very little of the fundamental physiological factors underlying many of the common manifestations of disease and injury of the nervous system. For example, although it is known that minor derangements of the cerebral circulation may cause grave disorders of nervous activity, yet we lack any complete analysis of the processes actually at work in producing these disorders. The time at our disposal does not allow of a comprehensive discussion of the problems indicated in the title of this paper, but so far as is possible I should like to review the main principles at present adopted by neurologists in the interpretation of the symptoms of diseases of the nervous system, to emphasize the importance of a physiological method of approach to these problems, and, finally, to discuss in more detail one physiological factor of importance in the production of disorders of function in the nervous system.

As neurologists, we have somewhat rigid conceptions of the general principles governing the dissolution of function in the nervous system. Valuable as they have been to us in the past, these conceptions are now tending to become traditions which are no longer altogether favourable to advance in knowledge. Undoubtedly, too, there is a growing inclination to invoke phylogenetic and psychogenetic factors rather than purely physiological ones in the interpretation of clinically observed disorders of the nervous system. Among the more fruitful of our guiding principles is Jackson's theory of the dissolution of function. According to this, function is "taken to pieces" from the top—the most recently acquired, most highly specialized, and

least deeply impressed elements of function suffering earliest and most severely. Further, since dissolution is partial, there is not only loss of function, but also release of function. As Jackson has expressed it, "the lower levels of evolution remaining" are released from higher control, are unbalanced, and act excessively, giving rise to positive or release symptoms. In every case, therefore, we have a dual symptomatology including negative or defect symptoms and positive or release symptoms. To these two groups we must add a third small group, that of so-called irritative symptoms. All clinically observed disorders of function are commonly considered to be included within these three groups.

To Head and Rivers we owe the addition of a phylogenetic factor to this hypothesis. Their view is that the lower level release symptoms represent what have been primitive activities of the nervous system at an earlier stage of its phylogenetic development. For example, protopathic sensibility and the mass reflex of spinal man are to be regarded as approximating in character and form to the normal sensori-motor reactions of some hypothetical primitive animal. In his recent book, *Instinct and the Unconscious*, Rivers has fully developed this biological conception of the "protopathic animal." In a somewhat loose way, phylogenetic ideas have been popular with Continental neurologists for some years, and we frequently see various abnormal reflex reactions described as reversions to the tree-climbing antics of our ape-like ancestors. It is expressive of the speculative character of our phylogenetic hypotheses that Professor Karl Pearson should recently have adduced evidence that our forebears were not arboreal in habit.

An even newer fashion, if I may use the term, is to postulate a psychical origin for disorders of bodily function of the most varied kind; for, flushed with its triumphs in the realms of the psychoneuroses, clinical psychology is now boldly attacking the problems of organic disease. Thus, we have the pernicious vomiting of pregnancy and infantile constipation at one extreme, Jacksonian epilepsy and disseminated sclerosis at the other, all attributed to psychical factors. Perhaps the criticism that the hypotheses at present dominating neurological thought are largely unfavourable to progress, needs further explanation; it will certainly meet with opposition. As far as Jackson's hypothesis is concerned, the chief danger probably lies in its being accepted as a universal law. Can we assume that defect and release explain all the symptoms of nervous disease, except the few somewhat diffidently attributed to irritation? It seems improbable. For example, in the present state of our knowledge it is not possible to give a satisfactory interpretation of the symptom-complex of paralysis agitans on this basis. As for the phylogenetic school, we must remember that its hypotheses are purely speculative, rarely find any support from comparative anatomy or physiology, and cannot replace investigation on scientific lines.

There are even greater objections to the undiscriminating application of the psychological method in so far as it pretends to determine the origin of disorders of function in the nervous system. Even in the case of the highest nervous functions Pavlov has strongly emphasized, and has indeed demonstrated, by his remarkable work on conditioned reflexes, that, in his own words, "it is necessary that the fundamental and guiding principles should be purely physiological ones." Although it may be no easy matter to decide exactly where physiological methods must give place to psychological ones, yet there can surely be no doubt that before we have recourse to the purely verbal resources of the psychologist we must exclude the presence of physiological factors. Jeliffe has provided us with a good example of the grotesque conclusions which may arise from the psychological investigation of a physiological problem. From the psycho-analysis of a small number of patients suffering from disseminated sclerosis Jeliffe concludes that the disease is the result of a defective power of psychic symbolism. As a consequence the affect of the individual is denied a normal and unrestricted outlet and discharges its "energy" downwards into the "somatic pathways" of the nervous system. These, being already in full activity, are overloaded and wrecked, the wreckage appearing as patches of exudation with subsequent sclerosis. Here "psychical energy," whatever it may be, is used as synonymous with physical energy. To assert that a man might coagulate his protoplasm by the heat of his anger would not be more ridiculous. Quite apart from obvious and common absurdities of this kind, psychological explanations must always be unsatisfying. For example, are we any wiser when we are told that the phenomena of an epileptic convulsion symbolize an attempt on the part of the epileptic to take refuge from the storm and stress of life by a return to the shelter of the maternal uterus?

Therefore one turns with relief from these abstract and speculative points of view to the less familiar discussion of physiological factors in the production of symptoms of disease. In this connexion the recent remarkable discoveries in the physiology of respiration promise to be of great interest and importance to us. Among these discoveries that of the regulation of the Hering-Breuer reflex by the chemical reaction of the blood, as Haldane has revealed it to us, affords a striking example of the subordination of a reflex reaction to a chemical non-nervous stimulus, in this case the hydrogen ion concentration of the blood. Not less important is the conception of anoxaemia, or oxygen-want, as it affects the nervous system. The extreme sensitiveness of the nerve cell and the synapse to anoxaemia has long been recognized, and by physiologists has been extensively investigated; yet we may search neurological literature in vain for any thorough discussion of a factor which, when present, influences the whole activity of the nervous system.

In anoxaemia the cells lack sufficient oxygen for their metabolic processes. The shortage may be due to a low oxygen tension in the blood, such as occurs at high altitudes and when the lungs are not being properly ventilated. We speak of this as the anoxic type. It may also depend upon deficiency of haemoglobin in the circulation, as in anaemia, or in carbon monoxide poisoning, when much of the haemoglobin is not free to take up oxygen. This is the anaemic type. Finally, the blood may be normal, but its supply to the tissues may be defective—the so-called stagnant type of anoxaemia. For some years observations have been accumulating on the psychical and neurological symptomatology of anoxaemia. In acute anoxaemia, however produced, there is distinct impairment of the highest cerebral functions; defect of memory, of attention, and of judgement, associated with marked emotional disturbances, such as pugnacity, obstinacy, and extreme irritability. Fixed ideas are common. In some subjects the symptoms of alcoholic intoxication are closely reproduced. On the lower levels we have muscular spasms and twitchings, weakness, tremor, and ataxy, with paraesthesiae and sensory impairment. Visual and auditory acuity are diminished. All these effects are transient and pass off on return to normal atmospheric conditions. We may conclude, therefore, that acute anoxaemia of short duration does not give rise to permanent defects of function.

Of the effects of chronic anoxaemia very little is known, and it is this form which we might expect to be of greater importance to us as neurologists. On the whole, the symptoms seem to resemble those of fatigue rather than those of alcoholic intoxication. A study of the nervous system in the various clinical conditions in which chronic anoxaemia obtains is urgently called for.

Many interesting details on all these points are to be found in the original papers of Haldane and his coworks, in those of Barcroft, and also in the reports to the Medical Research Council by medical officers who served with the Air Force in France during the war.

Anyone may reproduce for himself very readily some of these symptoms by a two-minute period of forced breathing. The effect of this is to wash out CO_2 from the blood, and thus to render the oxyhaemoglobin less easily dissociable. A state of relative anoxaemia results. Towards the end of the period of forced breathing marked carpo-pedal spasm and tonic spasm of the face and jaw muscles develop. The direct and the electrical excitability of the affected muscles increases, the tendon jerks increase in force, amplitude, and duration; while in the ensuing period of apnoea there is extreme weakness, ataxy, and tremor. As far as can be determined sensation is also impaired. In short, the symptom-complex of tetany is closely reproduced.

The effects of anoxaemia have been extensively studied in the spinal animal. It has long been known that slight grades of asphyxia increase the reflex excitability of the spinal centres. Kaya and Starling demonstrated that in this condition oxygen-want and not CO_2 excess is the

essential factor, but Mathison's observations indicate that minimal degrees of CO_2 excess may also have a stimulating effect. Slight asphyxia in the spinal cat leads to the spontaneous appearance of the scratch reflex. After posterior root section motor discharges still continue, indicating that a true hyperexcitability of spinal grey matter exists. Pilo-motor discharge and sweating are even more readily elicited than limb movements, so that with suitable grades of anoxaemia we can provoke simultaneous motor, sudorific, and pilo-motor reflexes. Associated with these the passage of urine has also been observed. In other words, a true mass reflex may be obtained from the spinal cat. Under deeper grades of anoxaemia co-ordination breaks down and tonic motor discharges from all the spinal motor neurons occur, followed by loss of excitability and death. With such severe degrees I am not at present concerned.

Of purely clinical evidence leading to the same conclusions there is abundance. The effects of oxygen-want are seen in the convulsions of asphyxial states and in the epileptiform fits which often usher in a cortical thrombosis, or accompany free haemorrhage from any part of the body. The irritative symptoms which indicate commencing compression of the brain in traumatic intracranial haemorrhage are associated with cyanosis of the brain, that is, with deficient oxygenation. When compression renders the affected region of the brain anaemic, irritative symptoms give place to paralytic. In an admirable article in Choyce's *System of Surgery* Trotter has dealt with the symptoms of compression from the point of view of the cerebral blood supply. He points out that cyanosis is associated with so-called irritative symptoms, but that the term irritation is not accurate in this connexion, for we are dealing, not with excessive stimulation, but with a true increase of excitability of the nerve cells. For example, the Jacksonian fits, which may arise in a case of depressed fracture over the motor cortex, depend, not upon irritation of the brain by indriven bone, but on compression of the cortex and interference with its circulation. There is no evidence that mechanical stimulation of the motor cortex can excite response. These observations confirm the conclusion, experimentally reached, that the initial reaction of the central nervous system to minimal degrees of oxygen-want is the development of an increased excitability, while paralysis of function follows more severe grades.

An interesting point seems to emerge from the analysis of these nervous symptoms. Side by side with increased excitability and over-response there is always impaired efficiency of function. Take the coarse movements of a Jacksonian fit resulting from compression of the motor cortex. They are clearly a travesty of the finely adapted purposive movements normally meditated by this region of the brain. Here, surely, there is no question of defect and release. It seems that the discharges from a hyperexcitable centre are not only exaggerated but they are also qualitatively altered—and this for the worse—and it is extremely doubtful if so-called irritative symptoms ever occur apart from distinct impairment of functional efficiency. If this conclusion be just, we see a group of phenomena to which Jackson's hypothesis cannot be applied, and a source of fallacy if we do apply it universally.

Clearly, then, all these observations are of importance to clinical neurology, though in the present state of our knowledge we cannot state how far-reaching this importance may be. It is not my intention at the moment to prove the importance of anoxaemia as a factor in the causation of disorders of the nervous system, but rather to urge its adequate consideration and investigation. All the evidence indicates that in the primitive character of sensitiveness to oxygen-want on the part of the central nervous system we have a fundamental and potent factor in the production of disordered nervous activity.

Let me conclude with an example of a symptom-complex to which anoxaemia may provide the clue—a clue not supplied, in my opinion, by the accepted phylogenetic interpretation. I refer to the "mass reflex." After transection of the spinal cord in man the isolated lower half of the cord enters at once into a state of profound spinal shock, in which reflex activity is, for the time, almost in abeyance. Emerging from this the cord passes on to a phase of intense reflex activity. Head and Riddoch, to whom we owe all our knowledge of the condition, find that when once activity is established, almost any stimulus applied to the body or limbs below the level of section evokes a sudden, stereotyped, and explosive outburst of reflex responses. It includes powerful bilateral flexion of the legs, contraction of the abdominal muscles, an outburst of sweating, and partial evacuation of the bladder. They call this complex response the mass reflex. They regard it as a release phenomenon in which lower motor centres freed from higher control react excessively. In addition, they add that it represents a primitive form of defensive reaction to harmful stimuli, which, after an age-long suppression in man, or "permanent inhibition," to use Head's own words, now reappears in its primitive form.

There seem to be several grave objections to this interpretation. In the first place, it may be doubted whether the conception of "permanent inhibition" as a normal process has any foundation. Secondly, the nervous system in known primitive animals, such as the sea anemone, hydra or insect, never shows an activity of this coarse, explosive and ill-adapted kind. Even the primitive nerve net of the hydrozoa is, as Parker has shown, capable of effecting finely graded and accurately localized responses. Delicacy of organic regulation of function is universal throughout the animal kingdom. In short, all the facts of comparative physiology are against such a view. Thirdly, it is difficult to see a useful protective function in a response consisting of squatting, sweating, and micturating to each and every stimulus, especially when we bear in mind that the protopathic animal has no power of localizing stimuli.

Let us therefore consider the mass reflex anew. In the stage of reflex activity the isolated portion of the cord responds to any stimulus by firing off at maximum intensity, and in a form which does not vary with the site of stimulation, every reflex reaction of which it is capable; motor, pilo-motor and sweating. The associated passage of urine is probably not a true act of micturition, of which the divided cord appears incapable, but depends upon the violent contraction of the abdominal muscles accompanying the mass reflex. Thus in one of Head and Riddoch's cases the abdominal muscles of one side alone took part in the reflex, and it was only when the reflex on this side was elicited that the passage of urine was observed, although the sweating was bilateral.

Therefore, all that the clinical evidence allows us to say is that the divided cord is now in a state of marked hyperexcitability, so that there is a simultaneous discharge of reflex reactions which are in no sense allied, but comprise all the reactions of which the cord is capable. Here then we have a condition apparently identical with that obtained in the spinal cat with suitable grades of oxygen starvation. Is it possible that in man under these conditions a similar process is at work? There is some evidence to this effect. We know that after division of the spinal cord the nutrition of all the tissues below the level of section suffers. The nerve cells of the cord do not escape, but show the chromatolytic changes described as "isolation dystrophy." As the most highly specialized tissue, we might expect the nervous system to suffer most severely. How far this defect of nutrition may reproduce or resemble the effects of anoxaemia, with its resulting formation and retention of acid metabolites in the nerve centres, we have no direct evidence to tell us, for the problem has not been investigated from this point of view. Nevertheless, the striking similarity of the mass reflex in man to that obtainable in the spinal animal, together with the known nutritive disorders of the cord in man, constitute strong presumptive evidence that the condition in the two cases has a common cause.

In conclusion, there seems no doubt that our first line of attack upon the problems of disordered function in the nervous system must be physiological. The psychical disturbances produced by anoxaemia are but one of many indications that, despite the reproaches and exhortations to reform with which in its youthful impetuosity the psychogenetic school overwhelms us, we cannot afford to abandon the help of the rapidly increasing wealth of physiological knowledge in favour of the verbal methods of research and the allegories of clinical psychology.

Dr. Riddoch said that if the reflex reactions in spinal man are to be closely compared with those of animals similar experimental conditions should obtain. It was never claimed by the original investigators of the "mass

reflex" that the complete reaction could be evoked in animals possessing an intact and fully developed nervous system. In the human infant, however, during the first few weeks of life it is sometimes possible to excite a reaction to harmful stimulation of the foot which shows many of the features of the mass reflex. Thus when a toe is pinched the lower limbs and trunk become strongly flexed and evacuation of urine may occur. Dr. Walshe's explanation of the mass reflex as being an expression of a hyperexcitable state of the spinal cord is not by itself entirely satisfactory; for although the reaction is excessive and involves a large muscular field, strong stimuli may be required to evoke it, and the latent period is often of considerable duration.

EPILEPSY FROM THE PSYCHOLOGICAL STANDPOINT.

BY

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On account of its pecularities epilepsy is of great social importance, and has from earliest times arrested the interest of the medical profession. An almost innumerable succession of hypotheses have been put forward to explain its etiology, yet even at the present time it remains one of the least understood of morbid phenomena. Unfortunately earlier investigators so concentrated their attention upon the convulsive paroxysms that they neglected to study the epileptic as an individual. Thus, as all seizures are essentially alike, the idea grew up that there could be but one epilepsy, also that the patient was only epileptic at the time of the seizure. This paralogism was not conducive to successful therapy, with the result that a majority of physicians have come to regard the epileptic as incurable and a bore, who is to be dismissed as soon as possible with a bromide mixture and a gloomy prognosis.

It has long been recognized that while in a small group of epileptics a diversity of physiogenic lesions can be demonstrated, a yet larger group exists in which no such factors are definitely inculpated. Hence arose the broad classification into symptomatic and idiopathic epilepsy, according to which the physiogenic lesion is regarded as causal in the so-called symptomatic group, while ignorance is the ground for using the label idiopathic. This fairly represents the contentions of Redlich, the great protagonist for the exclusively organic causation of epilepsy. Such an attitude seems curious when we reflect that any of the so-called causes may be present without producing epilepsy and vice versa. But the history of medicine shows many parallels to this line of thought, which is the curse of causalism.

More recently investigators have widened the scope of their study and have paid attention to the epileptic as an individual, a personality. With this the overwhelming prominence of the seizure has ceased to obscure our view, and we have come to regard epilepsy as a syndrome. Further, the new method of approach has revealed the etiological determinants, in any given case, to be multiple, not single. Thus we should more correctly speak of the conditions which in combination may produce the epileptic syndrome than of the cause of epilepsy. Believing, as many of us now do, in the multiplicity of conditions which contribute to the final clinical picture of this morbid state there is no warrant for ignoring the important influence which, in any given case, any of the so-called causes of symptomatic epilepsy may have. But at the same time we realize that it alone is never sufficient, and that each epileptic personality must receive careful individual study from every point of view. The matter might tersely be expressed in a formula as follows: (*a*) psychological factors + (*b*) physiological factors + (*c*) anatomical factors + (*d*) other factors (produce) = epileptic syndrome.

Since the several factors may be present in varying number and proportion in different cases the need for studying the individual epileptic is clear. Healy, in treating of crime, asks: "Who can tell whether the person who exhibits antisocial (sexualistic) tendencies is the victim of an excessive output from certain internally secreting glands, or of obsessive mental imagery, or of predisposing anatomical conditions, or of various environmental and physical experiences?" The answer, which applies equally to our subject, would seem to be that in any given case several, possibly all, of these factors are present as conditions determining behaviour. Having said so much, I may pass on to a more detailed consideration of psychological factors without being accused of ignoring physiogenic ones, which are admittedly active in varying degree in different cases. My purpose in this short paper is confined almost exclusively to a consideration of psychological factors because their enormous importance, particularly from the therapeutic point of view, has until quite recently not been appreciated.

Being now free from the limitation imposed by devoting attention exclusively to his seizures, let us study the epileptic in his interparoxysmal periods. Aschaffenburg has laid stress upon the moodiness which, independent of seizures, characterizes the epileptic. Grasset also noted that, "on the one hand, epileptics are sombre, taciturn, defiant, suspicious, always ready to fly into a passion, . . . on the other hand, they are obsequious, wheedlesome, full of effusion and gentleness." Vogt similarly found the epileptic character to be "a peculiar mixture of mutually antagonistic components." So much is this the case that Féré considered the character of potential epileptics to be sufficiently anomalous to justify a suspicion of the disease long before actual paroxysms manifested themselves.

Thus we see that the epileptic personality is notably very variable in his mental and emotional states. To know him one day does not enable us to predict what he will be like on the morrow. All we can be sure of is that his behaviour will be irregular and moody, and that he will exhibit selfishness and lack of control. The above characteristics show us the foundation for Lombroso's famous dictum that "the criminal is essentially an epileptic, even though he shows none of the ordinary signs of the disease." This dictum, though literally untrue, has been recognized by many—Tarde and Stekel, for example—as possessing deep significance. It is, however, to Pierce Clark that we owe the most penetrating and illuminating study of the epileptic mentality. As a result of his intensive observation and psychological analyses Clark has not only confirmed the view of Féré that the potential epileptic exhibits definite character traits, but has proceeded further to elucidate the psycho-biological basis underlying them and conditioning the seizures or other equivalents.

The essential features of the epileptic make-up may be summarized as follows: The epileptic shows an extreme hypersensitiveness or irritability associated with an exaggerated egoism and obstinacy. He is consequently unable to adjust himself to the unpleasant demands of his environment. Equally, however, he is not able to indulge his crude egoistical tendencies in society. A failure of integration therefore results, which expresses itself as a lapse of consciousness, convulsion, or "equivalent." Thus the seizure may be regarded as a regressive reaction away from stressful reality. The difficult or painful adjustment is thereby neurotically evaded, but, as with all such failures of adaptation, a heavy price must be paid for the evasion. Naturally this obstinate refusal to adapt is met with in varying degrees of intensity. An individual who refuses to adjust at all and whose integration thus breaks down even in face of slight environmental stress must be regarded as a highly psychopathic personality. Such an one, unless his attitude can be modified, will not go far, and characteristically we find the highest incidence of epilepsy in the first decade of life—a time when integration is but poorly developed and the world of phantasy is more real psychologically than is objective or external reality.

I have taken above the case of an individual whose make-up is such that from infancy he inflexibly refuses to make any effort at adjustment and yet demands of his environment all the advantages which adjustment would secure. Let us next consider those who possess in lesser degree the fundamental epileptic mentality. They will naturally require greater stress in one form or another before the characteristic reaction is brought into play. Here we see the importance of physiogenic conditioning factors; for an individual with a slighter degree of the essential epileptic make-up may have his adaptive ability diminished by the effects of intoxication, trauma, etc., which would in the equation previously given come in as increments to the (*b*), (*c*), or (*d*) factors. To take an example which on several occasions I have observed in

women. The stress of the menstrual period may be just sufficient to upset the balance so that at this period the left-hand side of the equation becomes equal to (produces) the epileptic syndrome. The disturbances associated with puberty may, in a predisposed person, similarly give rise to augmentations of stress with consequent maladaptation. (I may note here the frequency with which epilepsy is correlated with precocious over-development both of general physique and sex attributes.) Of smaller influences acting in this way, overeating and constipation are often sufficient to overbalance an epileptic personality.

There must always be a relationship between the degree of temperamental defect, the stress of the environment, and the (*b*), (*c*), and (*d*) factors, in order that their sum may be adequate to produce the epileptic syndrome. But this relationship varies from individual to individual; hence, each case requires close individual study. We might conceive a series in which at one end the psycho-biological instinctive defect was so great as to render other factors almost negligible, while at the other end a severe organic lesion might be required before the left hand of the equation would equal (produce) the syndrome. Intermediately, though in my opinion with a large preponderance towards the former end, would come the bulk of our cases. To look at the matter in this way helps us to understand how it comes about that the psychopathologist and the organicist each considers that a complete explanation of the syndrome may be arrived at exclusively from his particular standpoint. Each standpoint is valuable so long as we do not develop or retain a blindness for the other. Unfortunately, medicine, like theology, has continually suffered from narrow-mindedness. The refusal to appreciate and adapt to light gained from a new point of view is capable of producing in some medical men a lack of co-ordination not altogether unlike the reaction of an epileptic. It is regrettable that such failures occasionally manifest themselves even at what should be purely dispassionate scientific discussions.

The war, which has done so much to open the eyes of most people to the importance of psychological factors, has not been without influence upon our subject. A majority of the epileptic soldiers had already shown indications of their defect before the war. But to consider apparently attributable cases: Eager, in reporting his observations on a hundred consecutive cases of head injury at the Lord Derby War Hospital, gives it as his opinion that in the small percentage which subsequently developed epileptic reactions, these were referable to psychic rather than physical causes—the cerebral damage allowing instinctive tendencies to regain the upper hand; he also reports good results from psycho-therapeutic treatment. Stanford Read, in treating of war psychoses, states "it is quite certain that typical epileptic seizures frequently took place as a frank reaction to particular environments and specific situations." Increased experience all tends to show that the dividing line between hysteria and epilepsy is more and more difficult to draw. I notice, for example, that the table showing the differential diagnostic points between the two, which, as a student, I learnt from the sixth edition of Osler, is omitted from the last edition.

Time does not permit me to give any illustrative cases in which the epileptic syndrome was definitely brought out by war conditions, but I published two such in the British Medical Journal of January 15th, 1921, and I have met with a large number of others. These cases are peculiarly amenable to our therapy, because the stress calling out the reaction is altogether unusually severe, and the patient, unless allowed to form an epileptic habit, is comparatively easily brought back to a state in which he can make ordinary adaptations to the stress of every-day life. This question of habit formation is of considerable importance, for, *caeteris paribus*, the longer any type of reaction has been practised the more firmly does it become established. In the words of Thorndike, "the likelihood that any mental state or act will occur in response to any situation is in proportion to the closeness of its inborn (instinct) connexion therewith, to the frequency of the connexion therewith, and to the amount of satisfaction resulting." I regret that time does not allow me to enter also into the question of the special mental conflicts revealed by psychological exploration made during the transitory confusion accompanying minor attacks, and by analytical study of post-convulsive dream states, epileptic deliria, etc. To gain an insight into this the series of original publications by Pierce Clark from 1908 to 1920 must be studied.

There remains the last and most important point—namely, therapeusis. Does the psychological standpoint help us here? Although a complete change of make-up is not possible, a great modification can be accomplished by suitable measures. Here again I must insist upon the need for individual study of each epileptic personality, for rational therapy can only be based upon the understanding thereby gained. Of course the physiogenic factors (the (*b*), (*c*), and (*d*), in our equation) must be sought for and, to the best of our ability, relieved. Sedatives also may have a limited value, though as generally employed as a routine and with a total lack of discrimination they undoubtedly do more harm than good. Attention to good hygiene is important and in its widest sense this serves to inculcate obedience to discipline, regularity, and self-control—factors we should be aiming at from every angle. In the youthful epileptic all repressive measures should be abandoned, and training should be concrete and practical, not abstract or intellectual. It should gradually accustom him to the type of stress which he seeks to evade but must be brought to meet. To accomplish this tact and patience founded upon a real understanding of his difficulties are essential.

The educational demands made of the epileptic must be less insistent and for shorter periods of time than with normal children, and, above all, must be entirely individualistic and elastic. Novelty and a wide range of appeal are imperative. Steady work, though not carried to the point of fatigue, is a great desideratum. Too often the doctor encourages the epileptic, who is by nature a shirker, to give up his work. This is a great mistake: the epileptic rather needs vigorous encouragement and a stimulation of interest in everything that will keep up spontaneity and contact with the world. In frankly developed, though not in the disintegrated, epileptics psychological exploration and explanation will be of much help in affording to the patient some insight into the conditions underlying his faulty method of meeting life. Personally I can testify to this in cases which I have thus treated without the addition of any drugs. McCurdy has shown that even the so-called epileptic dementia merely indicates that the patient has almost entirely withdrawn his interest from the external world, and that by means of stimulating interest this dementia may be dissipated. He mentions a case, diagnosed as a hopeless dement in two State hospitals, who has been completely well, both as to his freedom from seizures and his "dementia," for nearly twenty years. Féré and Treadgold also refer to similar cases.

Treatment involving so much individual attention and training is more easily carried out in special institutions. Parents, even if they have the requisite time, are generally at a disadvantage in managing the epileptic, and tend either to be over-indulgent or, by impatience and demanding too much, to increase the stress against which the patient is, in his characteristic way, reacting. A great deal can nevertheless be accomplished with the patient in his home surroundings, provided that the understanding and co-operation of those about him can be secured. Psychological study of the epileptic personality has indeed made our outlook much more hopeful than previously it could be.

To sum up: (1) Epilepsy is a syndrome conditioned by a multiplicity of factors; (2) each epileptic personality requires intensive individual study; (3) in a majority of cases the psychological factors are by far the most important, and an understanding of these is, for therapeutic reasons, essential.

THE EARLY DIAGNOSIS AND TREATMENT OF DISSEMINATED SCLEROSIS.

BY

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In conjunction with Dr. E. M. Dunlop and Dr. J. W. S. Blacklock, both of the Pathological Department, Glasgow University and Western Infirmary, I have been endeavouring, on behalf of the Medical Research Council, to attempt an investigation of disseminated sclerosis on

clinical, serological, and experimental lines. Dr. Dunlop has carried out the Wassermann reactions of blood and cerebro-spinal fluids of a large series of cases of the disease and control cases of other nervous diseases, while Dr. Blacklock has been mainly responsible for the pathological portion of the investigation.

The recognition of disseminated sclerosis, once the disease is fully established, presents little clinical difficulty, but if the diagnosis be withheld until so late a stage, irreparable damage has been done to highly specialized nervous tissue, and a return to normal function is an impossibility. It would therefore appear imperative, from the point of view of possible successful treatment, that the disease be recognized in its earliest stages. On interrogating advanced cases where the clinical diagnosis is beyond doubt, one almost invariably elicits a fairly definite symptomatology referable to the earliest stages of the patient's illness.

In the first place, in almost every case one obtains a history of derangement of bladder function, as evidenced by urinary frequency, precipitancy, slight retention, or incontinence — points which have recently been emphasized by Dr. Henry Head. In the case of male patients I have frequently noted in addition that at about the same period nocturnal seminal emissions are complained of. In the second place, one can usually elicit from such a patient a past history of temporary derangement of vision and diplopia.

The important question therefore arises as to what attitude we are to adopt towards such symptoms occurring in young adults, especially if accompanied by central colour scotoma, retrobulbar neuritis, inco-ordination of associated ocular movements, or transient fine nystagmus. Do such symptoms constitute a complex which may be due to various causes? Can derangement of bladder function and diplopia ever be regarded as purely functional, and, if so, what is the evidence in support of such a statement? If they are inexplicable on a functional basis, can they be interpreted as heralding the onset of any organic nervous disease other than disseminated sclerosis, neuro-syphilis being, of course, excluded? It appears to me that it is on the possibility of an answer to these questions that the hope of the early recognition of disseminated sclerosis depends. The symptomatology of onset is, however, frequently undetected or ignored, and after a considerable lapse of time the physical signs of permanent damage develop one by one, the loss of the abdominal reflex being early and almost constant. Finally the disease is definitely recognized, though it is by no means clear as to how many of the so-called cardinal signs must have developed before a diagnosis is held to be justifiable.

In a previous communication to the *Lancet* I have already referred to the fact that the colloidal gold reaction of the cerebro-spinal fluid would appear to be almost constantly positive in this disease. In a series of twenty cases of functional nervous disease which I investigated the cerebro-spinal fluid was negative to Lange's reaction, and should these facts be substantiated in a larger series of cases some help in early diagnosis might be hoped for from the use of this method of examination. The exact significance of the colloidal gold reaction is at present uncertain. It would appear not to be specific in the sense that the Wassermann reaction is specific, though, like the Wassermann reaction, it depends on some quality of the globulin fraction. I do think, however, that the test is of undoubted value to the clinician as indicating the first definite sign of involvement of the central nervous system in organic disease.

The question of treatment is inseparable from that of etiology. Our results are in support of the view that in a large proportion of the cases presenting symptoms as described above, the condition is not of syphilitic origin, and further, that these have their basis in infection by some other agent which is probably specific in character.

In the experimental portion of the investigation blood (usually citrated) or cerebro-spinal fluid from cases of disseminated sclerosis has been used for primary inoculation into rabbits. Emulsions of brain and cord of certain animals which showed paralysis after inoculation have also been used for subinoculation into other rabbits. The material has been injected intraperitoneally and occasionally intratesticularly. Cerebro-spinal fluid from 8 cases of disseminated sclerosis has been injected into 15 rabbits, 5 of which (inoculated from 4 of the 8 patients) have shown definite nervous symptoms. Nine rabbits received injections of blood from 6 cases and 4 of these rabbits (inoculated from 2 of the 6 cases) showed nervous symptoms later. Six other animals have been inoculated with emulsions of brain and cord of rabbits, which developed nervous symptoms, and of these 2 have shown nervous symptoms. The other 19 rabbits have shown no evidence of nervous symptoms so far, the period of observation varying from nine months to seven weeks with the different animals. The symptoms which developed in the affected animals consisted chiefly of partial or complete paralysis of one or more limbs, the hind limbs being most frequently involved.

One series of experiments is of special interest:

On November 1st, 1920, rabbit 13 received intraperitoneally 4 c.cm. of the cerebro-spinal fluid from M. B., a case of typical disseminated sclerosis of two and a half years' duration. On May 17th, 1921, it was noted that the head was slightly bent over to the left side and the animal showed a tendency to travel in circles to the left. On May 22nd these symptoms were more definite, and by May 31st the animal had its head fully bent over to the left side, so that the left side of the face was parallel to the ground. It travelled in circles, always to the left, and had definite signs of cerebellar ataxia, continuously falling over to the left side and keeping rolling over in this direction unless supported by the wall of the cage. The rabbit was killed on June 7th. Subinoculation from this rabbit has so far been unsuccessful.

Rabbit 18, which had received 10 c.cm. of blood from the same patient on November 11th, 1920, by January 12th, 1921, had complete paralysis of the hind limbs and paresis of the forelimbs. The animal was killed on January 13th and mixed emulsions of brain and cord in saline were injected into two rabbits (R. 25, R. 26). Rabbit 26, on April 9th, 1921, showed cerebellar symptoms similar to those of rabbit 13 of this series, the head being twisted to the left side. On April 11th, the cerebellar symptoms were well marked. On April 18th the animal was unable to stand upright, as it constantly rolled over to the left side. Nystagmiform movements of the eyes were also noted on this date.

Great importance has been attached to the behaviour of control animals, inoculated with other materials or uninoculated, which have lived in the same cages as these animals or in adjacent cages and have not shown any nervous symptoms. The controls living in the same cages were in the first instance normal rabbits which were kept under observation for four and a half months, and after that rabbits inoculated with normal blood and cerebro-spinal fluid and also blood and spinal fluid from a case of neurosyphilis which had been under observation for over three months. Similarly the rabbits used for other experimental purposes, numbering forty-five, which have lived in adjacent cages to the above for three months or more have shown no nervous symptoms. Histological and bacteriological investigation of the inoculated animals is also being carried out.

From the above experiments it would appear that a disease showing nervous symptoms can be produced in rabbits inoculated with blood or spinal fluid from cases of disseminated sclerosis. This disease can be transferred to other rabbits by an injection of an emulsion of brain and cord of inoculated rabbits showing nervous symptoms before death. It would therefore seem that in this disease we are dealing with an infective agent.

The credit for the pioneer work in connexion with the experimental transmission of disseminated sclerosis to animals is due to Dr. W. E. Bullock, who published his results in the *Lancet* in 1913 and stated that on the development of symptoms in inoculated animals, histological examination of the animals showed a complete reproduction of the appearances found in the human subject. There have been recently circumstantial claims by various Continental writers, notably Kuhn and Steiner, to have detected the presence of a spirochaete in inoculated animals, while Schuster and Siemerling have described similar spirochaetes in the brain of patients who have died of this disease.

It appeared to me, therefore, justifiable to adopt by way of investigation energetic treatment with potassium iodide, mercury, and novarsenobillon. The value of the first two drugs in the treatment of disseminated sclerosis was strongly urged by Marie thirty years ago; arsenic is in almost general use in this connexion and the employment of it in the organic form is not a seriously new departure. It is of interest to note that there is now a considerable mass of experimental evidence to show that when the drug

is injected intravenously arsenic can be subsequently detected in the cerebro-spinal fluid in a fair degree of concentration. The best results have been obtained by intensive mercurialization by inunction with the Aachen formula, combined with repeated intravenous injections of small amounts of novarsenobillon extending up to twenty or more doses, intramuscular injections of intramine and oral administration of potassium iodide.

In addition the treatment of the functional manifestations would appear to be worthy of investigation. In no case was serious ill effect noted. Some cases appeared to derive no benefit clinically from treatment. In others considerable improvement was noted as regards speech, gait, intention tremor and bladder control. Of course the question of natural remissions had to be considered, especially in the early cases which responded best, but it is noteworthy that even in later cases which showed no clinical improvement, the condition of the cerebro-spinal fluid as regards behaviour to Lange's test underwent a definite change in the direction towards normal. It might therefore appear justifiable to administer these drugs to early cases in the hope of arresting the further progress of the disease.

Dr. RIDDOCH laid stress upon the importance of a history of transient defects of function in the diagnosis of disseminated sclerosis at an early stage and the diverse symptomatology of the affection.

At the London Hospital the Lange colloidal gold test was being carried out by Dr. Marrack in his laboratory as a routine in the examination of cerebro-spinal fluid. Samples of fluid in a few cases of disseminated sclerosis had been examined, and when the test was positive it had yielded the so-called tabetic form of curve. The test was entirely negative in one typical example of the disease, and a mild tabetic curve had been occasionally obtained in diseases other than disseminated sclerosis and neuro-syphilis. He felt that although the test might in the future prove of great value, caution was yet necessary in estimating its diagnostic importance.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CASE OF TRAUMATIC ANIRIDIA.

THE following case may be of some interest on account of its rarity. On March 29th, 1904, a man, aged 22, was admitted into the Londonderry Eye, Ear, Nose and Throat Hospital. He presented a rather peculiar appearance. His left eye looked as if a large black sloe or cherry were occupying the place of the pupil or anterior surface of the globe seen between the eyelids; on the right side was a normal eye with a hazel grey iris; the anterior chamber of the left eye was full of blood, which extended all around to the edges of the sclerotic and all over the posterior surface of the cornea. There was complete blindness of the eye, and no red reflex could be got by the ophthalmoscope. The patient, who said that he felt no pain in the eye, stated that some hours previously a piece of glass had entered the eye and had been pulled out.

The eye was douched and cleansed with a warm boric acid lotion and examined. There was a small insignificant closed and clean wound at the sclerotic margin of the cornea; there was nothing in the wound nor protruding from it, but the iris was completely absent. A drop of solution of atropine was instilled, to give perhaps some rest to the eye, which was then bandaged and the patient put to bed. During the two weeks taken for the absorption of the blood and clearing up of the parts no pain was experienced and there was no reaction or inflammatory trouble, showing that there had been no sepsis, and that the ciliary body had escaped injury. With and without the aid of the ophthalmoscope the ciliary body could be seen beautifully all around with its normal anatomical attachments and with no irregularity in its contour. The whole of the fundus was in a healthy and normal condition. There was no escape of vitreous and the lens was uninjured. The sight was good for distance and large print could be read. No trace of iris could be seen in any of the chambers, so that it must have been drawn out with the piece of glass through the small wound. That the aniridia might have been congenital was, for obvious and various reasons, after investigation, completely negatived. On looking over some works on the eye for a like case, I found only one case, related by Fuchs. In this case a small grey mass was found in one of the chambers after the clearing up of the parts. This was considered the remains of the iris, which had been completely detached by some accident, the nature of which is not mentioned.

Londonderry. W. B. HUNTER, M.D.

THE IODINE TREATMENT OF GOITRE.

A GOOD deal has been written on the action of iodine, used both internally and externally, as a therapeutic agent in goitre. I have used for a large number of years in the treatment of goitre both sodium and potassium iodide (I prefer sodium iodide), with a tonic such as syr. ferri phos. co. and syr. hypophos. co., also syr. ferri iodidi. In the valleys of east and north-east Lancashire the disease is endemic, especially in females, quite a large number being affected between the ages of 16 and 30 years, but there are a large number of cases over that age, and the largest goitres are seen in these cases. Another marked feature is that it affects males much less frequently than females; this is particularly true of the exophthalmic form. Males respond to the treatment much more quickly, consequently the duration of treatment is very much less than in females.

The method of administration of iodine may be a matter of opinion. I usually give 2½ to 3 grains of sodium iodide three times a day between meals, continued for about six weeks, then discontinued for about a month. The treatment is resumed, and so on for an indefinite period.

Large goitres disappear, some more quickly than others, and the treatment may have to be kept up for two or more years. Larger doses of the drug may cause patients—especially males, and more especially elderly males—to lose flesh quickly, but the weight is soon recovered on reduction or discontinuance of the drug. Measurements of the neck taken from time to time show that the swelling softens first and then grows smaller, and that the greatest and most rapid reduction takes place during the interval when the treatment is interrupted. Some of the cases have been under *x*-ray treatment for years; others have been advised to have the gland removed. I may have been fortunate in not having any that have required operative treatment, as all have cleared up with iodine.

When the risks and after-effects of removal of the gland are considered, together with the possibility of having to take thyroid for the rest of life, the alternative of taking iodine for six months to two years, or even longer, is, in my opinion, preferable. If the iodine treatment were carried out generally the number of cases requiring operation would be very small. Exophthalmic goitre responds to treatment more slowly at first, and the other phenomena—cardiac, nervous, etc.—require separate attention, but these subside with improvement in the gland.

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TORSION OF THE TESTIS OCCURRING DURING OR IMMEDIATELY AFTER BIRTH.

THE rarity of torsion of the testis at so early a period in life makes the following case of interest.

Mrs. F. gave birth to a full-time male child on June 5th, at 8 p.m. No doctor was present at the confinement, but the next day the nurse in charge noticed that the right testicle was swollen.

Eleven days later the child was admitted to the Children's Hospital. He had gained weight, was taking food well, and appeared to be in no distress whatever. The right testicle was hard, but possessed a certain elasticity suggestive of deep fluid. The scrotum had a dusky violet tinge, and the skin was adherent at the lower pole and towards the mid-line. The cord at the upper pole appeared to be hard and knotted. At operation the testicle and its coverings were removed together with the adherent part of the skin, and the cord tied at the external ring. Convalescence was uneventful.

The removed testis showed the typical plum-like appearance of gangrene, and in its centre contained some dark fluid. The organ appeared to lie horizontally, the constituent parts of the cord being separated and entering the organ along the whole

length of the surface. The twist in the cord was double—that is, the organ had performed two complete revolutions from left to right in a horizontal plane. The adhesions between the external spermatic fascia and the dartos were quite organized, showing that the condition had been of some standing.

I have little doubt that the condition was present some time before the nurse observed it, probably just before, during, or immediately after birth. The points of interest were: (1) The insidiousness of onset; and (2) the lack of constitutional disturbance.

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British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

NORTH LANCASHIRE AND SOUTH WESTMORLAND BRANCH.

At a meeting of the North Lancashire and South Westmorland Branch of the British Medical Association held at Kendal on October 26th, the President, Mr. A. S. Barling, opened a discussion on "The diagnostic value of abdominal pain." As viscera had no spinal nerves they would be expected to be insensitive to pain, and that this was so was illustrated by a case of obstructed colon, in which a side-to-side anastomosis had to be done hurriedly and the loop left outside; four days later the loop was cut without any anaesthetic, and no pain was felt excepting a slight hypogastric pain, which was reflected, not direct. Sir James Mackenzie had originated investigation into hyperalgesic points ten years ago; but as he was one of the most modest of men, his work received little or no appreciation. Any irritation of the viscera was responded to by sensation of pain in the spinal nerve whose distribution to the parietes corresponded with the affected viscera. Cutting did not give enough stimulus to initiate pain in the corresponding cerebro-spinal nerve area. The theory was that visceral irritation, carried to the spine, affected the neighbouring centre in the spine, which initiated an impulse to the afferent cerebro-spinal nerve. This was conveyed to the sensorium, and from there referred to the area of distribution of the corresponding cerebro-spinal nerve. Mr. Barling illustrated his remarks on an outline drawn by Dr. Somervell. He indicated the hyperalgesic points found in disease of the stomach, duodenum, appendix, large and small intestines, and also the gall bladder and kidneys. It was well known, he said, that although viscera were insensitive to pain, visceral pain was the most severe of all—for example, gall stones, kidney stones, and colic. A case was described in which the diagnosis of colon involvement, as distinguished from appendicitis, was made before operation from the situation of hyperalgesic points.

An interesting discussion followed. The President, in closing the discussion, welcomed the criticism, as he thought people only moved when they disagreed.

Dr. Livingston showed a test for sugar; he also showed photographs of a meningocele 7 in. in circumference at the junction with the skull, which was successfully operated on, the patient being a baby 8 weeks old. Dr. Craig showed a case of osteomyelitis, with numerous pyaemic foci, in a boy aged 11; amputation of the left leg at the hip had been necessary and the boy was now recovering. Dr. Henderson read a short paper on his experience as a school medical officer in Westmorland, giving statistics of the different diseases found.

Dr. Gibson thanked those who had read notes and shown cases, and Dr. Oldham complimented the organizers on a very successful meeting. The members were entertained to tea by the Secretary of the Kendal Division, Dr. J. Lang Cochrane.

According to the *Japan Medical World* the number of licensed dentists in Japan in February, 1921, was 6,409, or six times as many as there were in 1907; in addition to this about 600 dental students are expected to obtain their licences as dentists during this year. There are now twelve dental schools in Japan, four of them of the highest standing, although a dental college under Government control has not yet been established. Only two of the medical colleges attached to the universities have their own dental departments—namely, the Tokyo Imperial University and the Keio University.

Reports of Societies.

THE THRESHOLD OF THE KIDNEY.

In his presidential address to the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, on November 8th, Dr. W. Langdon Brown emphasized the reciprocal advantages to be derived from co operation between the laboratory worker and the clinician. The Section constituted a common ground for workers in both fields, where criticism and comparison were possible. His address was largely a plea for more co-operative study of this kind with regard to the kidney and its regulating mechanism; such a study could not fail to afford fresh guidance as to treatment. The function of the kidney was to keep the chemical composition of the blood constant, and the manner in which this was achieved was now beginning to be understood, with, in consequence, a better appreciation of the significance of certain departures from the normal performance of kidney function in disease. The three factors in the problem were the urine, the kidney, and the blood, and if the condition of any two of these was known, that of the third could be deduced. The kidney caused very little change in the material which it excreted; the formation of hippuric acid in the kidney was about the only known instance of such an alteration of chemical constitution. In glycosuria the kidney reacted in a curiously subtle way, while in albuminuria much might be learnt from a biochemical study of the blood. Certain biochemical tests had now been elaborated which enabled a comparison to be made between the condition of the urine and that of the blood, and a good deal of light was thrown upon the manner in which the kidney functioned. Here Dr. Langdon Brown gratefully acknowledged the large amount of biochemical work which Dr. Mackenzie Wallis had done in his own cases. He went on to enumerate and summarize Ambard's recent work on the physiology of the kidney. It was clear that there was a limit to the degree of concentration which the kidney could accomplish, but that limit was not reached under normal conditions. The more the parenchyma of the kidney was diseased the less was the power of concentration. This power fell after surgical operations (thereby accounting for the urinaemia which followed) and in gastro-intestinal conditions. In the toxaemic kidney Dr. Langdon Brown considered that the threshold was abruptly lowered by degenerative but not inflammatory change. Severe forms of this were seen in poisoning by mercurial salts, arsenic, cantharides, and uranium bichromate, and in the toxaemia of pregnancy. In cases of toxaemic kidney there was a marked increase of diastase output, and this must be due to the threshold of diastase being lower than normal. If the patient with toxaemic kidney could be kept alive, complete recovery might be expected; this condition did not lead to chronic nephritis

In the course of his address Dr. Langdon Brown projected on the screen a series of charts illustrating pronounced cases of kidney disturbance of various types. He said that one considerable factor in some cases of glycosuria was the delay in the storage of the sugar after it was absorbed. If patients were allowed starch which had been cooked in fat there was a much slower appearance of sugar than otherwise. In one case a child had nocturnal enuresis when the sugar threshold was passed, but if that threshold was not exceeded no symptoms ensued. Another case passed a large quantity of sugar following upon a period of pronounced mental agitation. A great fallacy in all these investigations was to base a conclusion on one single sugar test. He had seen a big fall in the amount of glycosuria as the result of a single "egg and vegetable" day. A rise of the threshold seemed to follow rather than to precede hyperglycaemia. Polyuria and increased thirst only occurred to the accompaniment of a considerable increase of the threshold. The hyperglycaemia could be abolished by giving phloridzin, and he would like to invite discussion on the question whether this drug was justifiable. He had not himself used it, but had relied so far on egg and vegetable diet. In conclusion, he mentioned that the polyuria of diabetes insipidus could be kept in check by injections of pituitary gland. Dr. Cow of Cambridge had

shown that water given by the mouth and absorbed by the gastro-intestinal tract was more active than the same quantity of water injected subcutaneously or intravenously, and it was possible that in the former case some ferment was taken up by the water, which had a direct stimulating action upon the pituitary gland.

Dr. LAPTHORN SMITH, in moving a vote of thanks, mentioned that sugar had been made to appear in the urine of a dog by scratching the floor of the fourth ventricle. He had always had an idea that the central nervous system played a part in the production of diabetes, and this seemed to be confirmed by cases in which the disease followed definitely upon some great nervous or mental strain. He also raised the question of whether the substitution of saccharin for sugar had any harmful effects.

Dr. LANGDON BROWN, in replying, said that he had always held that diabetes could not be explained without taking the sympathetic nervous system into account. He was not convinced that the pancreas told the whole story, and he had tried to bring forward such other evidence as he could in his recent Croonian lectures. With regard to saccharin, he thought it was better to get people to do without it, and most of his own patients preferred to avoid it, especially as it had no nutritive value.

SIMPLE ENLARGEMENT OF THE PROSTATE.

AT a meeting of the Medico-Chirurgical Society of Edinburgh, on November 2nd, the retiring President, Emeritus Professor F. M. CAIRD, gave his valedictory address, reviewing the work and some of the outstanding personalities of the society during the cycle of a hundred years just closed. Thereafter the new President, Sir ROBERT W. PHILIP, took the chair.

Sir DAVID WALLACE read a paper on "Simple enlargement of the prostate." He paid a tribute to the work of Freyer, who had made the operation on the prostate a practical one. He limited his subject to simple enlargement of the prostate, excluding conditions of stenosis of the prostatic urethra, the small fibrous prostate, and the malignant prostate. The exclusion of these conditions might be difficult, for the symptoms might be similar; cystoscopy was sometimes of help. Treatment differed according to a clinical grouping of the cases. In the early cases, where the symptoms of frequent micturition were not urgent, and the bladder was not distended although the prostate might be definitely enlarged, he did not recommend operation, for three reasons: because the prostatic enlargement was not necessarily progressive, because the symptoms did not always become worse, and because the operation was a serious one. In such cases palliative measures—for example, attention to the bowels and diet, avoidance of cold, care in completing the act of micturition, and the use of citrate of potash—might relieve and even cure the condition. In these cases he was against catheterization. It must be remembered that a proportion of these early cases (1 in 6) became malignant, so that they must be kept under observation. The second group, of more advanced cases, with increasing frequency of micturition and precipitate calls to urinate, but with a good state of general health, called for prostatectomy. The third group, of more advanced cases, where the bladder was distended, there was a large voiding of overflow urine of low specific gravity, and the general health was poor, required careful preliminary study before a decision as to treatment could be taken. The condition of the kidneys, as judged by the daily urea in the urine, and also the blood urea, must be ascertained. A daily quantity of urine of from 120 to 160 oz., with a specific gravity of 1003, and a distended bladder, called not for prostatectomy but either for catheterization or cystostomy, and preferably the former. Those cases in this third group in which the urine was septic were, in his experience, a less grave operation risk than the former, and in them it was his practice to do prostatectomy. As to the operation, he preferred the suprapubic to the perineal route; the latter was the slower operation, and the condition of the bladder could not be seen so well. Speed in the operation was a desideratum; he opened the bladder close to the symphysis, and in dealing with the emptied prostatic cavity he was careful to mould it, and occasionally to pack it, as a precaution against haemorrhage; for drainage he used a tube in the bladder and not a urethral catheter. Thomson Walker recommended a more open operation, so as to remove carefully all tags, and also to ensure arrest of bleeding; but he did not adopt this as a routine. It required more time; further, the danger of bleeding was rather from veins than arteries, and could be dealt with as above described.

Emeritus Professor CAIRD said the above classification of cases into operative and non-operative groups was valuable. The older the patient the greater the risk; but the risk was justified by the results in the successful cases. Mr. MILES said that age alone could not determine the question of operation, and cited cases where operation had succeeded in a man aged 78 and failed in a middle-aged man. Prognosis in the operative case was uncertain; and he agreed with the policy of caution in advising operation. As to the operation itself, he preferred the more open method, enabling one to see better the condition in the prostatic capsule. Mr. C. W. CATHCART, from a successful case of long-continued pubic drainage, suggested a trial of this procedure in advanced cases where operation was not possible. Dr. J. ORR, speaking as a general practitioner, advised the early sending of prostatic cases to the surgeon. The outlook for the prostatic patient was better now than when he began practice.

Mr. H. WADE gave statistics as to operation mortality from the clinical records of the Royal Infirmary, which all referred to the advanced type of case. For the period 1902–12 the operation mortality was 35.4 per cent.; for the period 1910–20 the operation mortality was 25 per cent.; for the same period, in 198 severe cases not operated on, 52 died, a mortality of 25 per cent. Mr. J. W. STRUTHERS alluded to this last group of advanced cases left without operation, and suggested that, in view of their miserable condition and very probable early death, prostatectomy should be done more frequently, even in spite of the grave operation risks. Mr. D. P. D. WILKIE spoke of his *post-mortem* experience of cases after prostatectomy. In these there was nearly always septic cellulitis in the space of Retzius, and from this a general septicaemia. In view of this he suggested a two-stage operation: first, opening the bladder, and later enucleating the prostate.

Sir DAVID WALLACE, in his reply, detailed the palliative measures advised, emphasizing the value of micturating whenever desire was felt, and doing so slowly and thoroughly. He did not agree with the frequency of infection of the space of Retzius in fatal cases. Septic infection was rather from the veins in the capsule. He did not advocate the two-stage operation.

ON November 3rd a paper was read before the Harrogate Medical Society by Mr. A. B. PAVEY-SMITH, F.R.C.S., entitled "Some remote effects of tonsillitis." The evidence, experimental and clinical, pointing to the tonsil as an important focus of infection in systemic disease was reviewed, and the diagnosis of latent chronic tonsillitis described. A discussion, concerned especially with arthritis and its connexion with tonsillar infection, followed.

AT the annual meeting of the German Medico-Legal Society, held recently at Erlangen, the imperative necessity for official and police *post-mortem* examinations was emphasized.

IN the organ of the Finnish Medical Society (*Finska Läkaresällskapets Handlingar*) a letter addressed to Sir William Macewen, President of the Société Internationale de Chirurgie, by some of the leading surgeons of Finland, is published, protesting against the decision, in the summer of 1920, to exclude all German and Austrian members.

AN International Congress of Maternal and Child Welfare will be held in Paris from July 6th to 8th, 1922; a preliminary programme has been drawn up, and communications should be addressed to the Secretary-General of the Ligue contre la Mortalité Infantile, Paris.

ACCORDING to the *Presse Médicale*, over 100 French physicians responded to the invitation of the medical profession in Poland to attend the first Franco-Polish Medical Congress at Warsaw. The second congress is to be held in Paris in 1923.

Reviews.

AN ENCYCLOPAEDIA OF MIDWIFERY AND WOMEN'S DISEASES.

After some considerable delay, unavoidably associated with post-war trade conditions, *The Practitioners' Encyclopaedia of Midwifery and the Diseases of Women*[1] has made its appearance as one of the "Oxford Medical Publications." The delay would appear to have been justified, however, as the paper, printing, and general appearance of the book are beyond cavil. Our first desire is to congratulate Dr. Fairbairn on the successful completion of what must have been a herculean task in editorship, and our second feeling is that the book bears clear evidence that he was the right man to edit such a composite volume. The conjunction of midwifery and gynaecology in one volume is somewhat of a new venture, and although their natural and organic association is well recognized in practice, yet the two have hitherto usually been presented in separate books. Nothing in the whole volume is better in its way than the editor's introductory remarks, which define the respective positions and relations of the two subjects with a lucidity as masterly as it is characteristic.

In a short review of a work of this sort—950 quarto pages written by some fifty different contributors—it is difficult to know where to begin. But in the first place it must be stated in regard to its scope that the *Encyclopaedia* covers the whole ground usually and legitimately included under its combined title, and even offers valuable contributions on such aspects of the subjects as the public health, social, and medico-legal bearings of obstetrics and gynaecology. Dr. Fairbairn has been fortunate in obtaining the co-operation of a very able team of contributors, and he has, in our opinion, succeeded in obtaining from his collaborators articles upon subjects on which each individually may be accepted as an authority.

The *Encyclopaedia* is divided into seven parts. The first covers the life-history of the female reproductive organs, and under this comprehensive term are included the anatomy and development of the organs, the physiology of ovulation and menstruation, conception, the development of the early ovum, and the changes in the maternal organism consequent upon impregnation—all of which are written by Dr. R. W. Johnstone. This part of the subject is rounded off by articles on the physiology of labour and the puerperium by Dr. Nepean Longridge, and on the physiology of the menopause by Dr. T. G. Stevens.

Part II deals with normal reproduction from the point of view of obstetric practice. The Editor himself discusses the diagnosis of pregnancy, while Dr. J. W. Ballantyne deals with one of his favourite topics, the hygiene of pregnancy. The management of normal labour is entrusted to Dr. Haig Ferguson, who has also a valuable article on the application of hospital methods to private midwifery practice. In view of recent correspondence in the Journal these two articles call for special mention, for the teaching is thoroughly sound and scrupulous without being open to the reproach of any impracticable idealism. The relief of pain in labour is fully and admirably discussed by Dr. R. C. Buist in this section and amplified in a subsequent part of the volume by Dr. Osborne Greenwood; both give details in regard to the production of "twilight sleep."

Part III is occupied with discussions on abnormal reproduction, under three headings: abnormal pregnancy, abnormal labour, and abnormal puerperium. Amongst the articles in the first section are two by Dr. Gordon Ley on stillbirth and on the toxaemias. These are excellent, if a trifle too dogmatic in parts; the writer, however, has a weakness for statistics, which are hardly suitable for a work of this kind. General diseases complicating pregnancy are adequately dealt with by Dr. Buist, whilst Dr. John Adams adds a short article on syphilis in pregnancy, based on his great experience at the Thavies Inn Centre. Dr. Eden and Dr. Clifford White discuss between them the different forms of abortion, and Dr. Russell Andrews writes on ectopic pregnancy in a very full and practical way, stressing in particular the difficulties of differential diagnosis. Dr. Andrews is also responsible for the first article in the section on abnormal labour—namely, that on persistent occipito-posterior positions. Our only criticism here will be directed to his sweeping assertion that "rotation with forceps must be mentioned only to be condemned as a dangerous method which ought never to be employed." This is the manœuvre which gave "great joy" to Smellie, and it continues to give on occasion great satisfaction to many obstetricians of wide knowledge and experience. When Dr. Andrews supports his dogma by instancing what may happen when the method is demonstrated on the closed fist, one is compelled to wonder if his own experience of the manœuvre goes no further. At any rate fistic arguments are fallacious, and one might as well condemn the use of the forceps as an extractor because of the disaster which befell Uncle Toby's fists when Dr. Slop demonstrated his forceps upon them. "Upon my honour, Sir, you have tore every bit of skin quite off the back of both my hands with your forceps, and you have crushed all my knuckles into the bargain with them to a jelly!"

Preternatural labour is treated by Sir William Smyly in a lucid and practical fashion, and the same may be said of Dr. A. W. Russell's articles on twins and monstrosities. Dr. Blacker contributes the articles on haemorrhage, both *ante-* and *post-partum*, and has succeeded in giving practical and full instruction on these large subjects in a laudably succinct manner. Professor Jardine is responsible for the article on the clinical aspects of eclampsia, and his writing bears the invaluable stamp of an unrivalled practical experience of the condition. Professor Munro Kerr and Dr. Prescott Hedley discuss delayed and obstructed labour, and in their excellent articles both have kept in view the essentially practical aims of the volume. The complications of the puerperium are dealt with by Dr. Nepean Longridge, with the exception of sepsis, which is fully discussed by Professor Munro Kerr in the section on infection in the diseases of women—to which it logically belongs.

Part IV is devoted to the infant; questions of feeding and general supervision are discussed by Drs. H. C. Cameron, Eric Pritchard, and H. K. Waller, while asphyxia, deformities, and ophthalmia are taken up by Dr. J. A. Willett, Mr. J. Howell Evans, and Dr. J. H. Fisher respectively.

The second half of the *Encyclopaedia* deals with the subject of the diseases of women. But as many gynaecological conditions are closely knit up with conditions affecting organs and systems other than the reproductive or genito-urinary, the Editor has wisely set his bounds reasonably wide, and has included a useful section on conditions in the abdomen, and in the renal and nervous systems, which may complicate or simulate gynaecological disease. The description of methods of examination is written by the Editor, and supplemented by special articles by Drs. Topley, H. W. Wilson, and Knox. Then follows a series of articles on gynaecological symptoms by Dr. Aldrich-Blake, Lady Barrett, Professor Hellier, and Dr. Beckwith Whitehouse. The article on uterine haemorrhage by the last named is masterly, but it is a pity that in a book of this kind he has elected to use terms such as epimenorrhoea, menostaxis, etc., which, however desirably accurate they may be, are not in common use amongst gynaecologists, and are unknown to all but a few general practitioners. A "practitioners' encyclopaedia" is not the place in which to "push" a new terminology, and we think the Editor might have exercised his control on this point with advantage.

Pathological conditions are classified under malformations (by Dr. J. W. Ballantyne), vascular lesions (in connexion with which Dr. Fothergill refers to varicocele, so commonly diagnosed as ovaritis or ovarian neuralgia), mechanical lesions, infections, overgrowth, new growth, and retrogressive changes. The main varieties of infection are discussed separately, following upon a general review of the whole subject of infection and its effects by Dr. R. W. Johnstone. Gonorrhoea is dealt with by Dr. Herbert Williamson, puerperal infection by Professor Munro Kerr, tuberculosis by Professor Ewen Maclean, and syphilis and the rarer varieties by Dr. J. M. Wyatt.

In the next two sections Dr. T. G. Stevens supplies a general review of the subjects of overgrowth and new

[1] *The Practitioners' Encyclopaedia of Midwifery and the Diseases of Women.* Edited by John S. Fairbairn, M.A., B.M., B.Ch.Oxon., F.R.C.P.Lond., F.R.C.S.Eng., Obstetric Physician, St. Thomas's Hospital, London, etc. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1921. (Cr. 4to, pp. xv + 950; 175 figures. £3 3s.)

growth, and describes in particular vulvar and vaginal neoplasms, and the retrogressive changes of the menopausal and post-climacteric period. Dr. Fletcher Shaw also writes on overgrowth and on pre-climacteric retrogressive changes, while Dr. Comyns Berkeley deals with fibroids and malignant disease of the uterus, and Dr. Willett with ovarian tumours.

The new and widened outlook in midwifery is interestingly indicated in Part VI, in which Dr. Eardley Holland has an article on preventive obstetrics. Dr. Wheaton follows this by a study of the methods to be adopted, and describes the working of maternity and child welfare centres. Mrs. Adamson writes with special knowledge on industrial occupations and their effects on the health of women workers, while Miss Catherine Chisholm deals with menstruation in relation to women's work. Mr. Edwin Smith contributes a useful chapter on medico-legal points arising in connexion with gynaecological and obstetrical work.

Part VII comprises a description of operative and other therapeutic measures, both obstetrical and gynaecological. The writers include the Editor, Dr. Victor Bonney, Dr. Hastings Tweedy, Dr. W. E. Fothergill, Dr. Blacker, Dr. Cuthbert Lockyer, and others. The articles are all full and essentially practical, and will be most helpful to the practitioner. We have sought in vain for any reference to the operation of vaginal hysterotomy, and the omission of a description of this operation, which is now well established as being of great value within certain limited indications, is regrettable. The articles on vaccines, *x* rays, electricity, radium, massage, and physical exercises, will be amongst the most useful to the general practitioner.

The illustrations are, on the whole, scarcely worthy of the letterpress, as judged by the standard of the modern textbook. They vary greatly in merit, and, being mostly borrowed, have not always the exact aptness that is desirable. Obviously, however, freer illustration would have increased materially the size of an already large volume. The index seems both full and accurate.

Taking it all in all this is the best *Encyclopaedia* of its kind that we have seen. It is eminently calculated to be helpful to the practitioner as a work of ready reference, and as its merits become known it is assured of a wide circulation and an increasing popularity. It is manifestly the outcome of a great deal of thought on the part of the Editor as to the actual needs of those for whose use it is primarily designed, as well as in the arrangement of the matter, which is in some respects unique. It is a mine of accurate information, and its teaching is based upon an enormous collective experience gleaned from practically all the medical schools of the United Kingdom. We conclude as we began, by congratulating Dr. Fairbairn on a monumental achievement.

DEVELOPMENTAL PATHOLOGY.[2]

Outwardly Professor Talbot's volume has all the appearance of a solid scientific work; nearly every page carries an illustration. Its title, *Developmental Pathology*, raises the anticipation that here, at last, is a much needed book—one which synthetizes all we know concerning the abnormalities of development to which the human body is so liable. No sooner do we open the covers and dip into its pages than our suspicions are aroused, and before we reach the end we are convinced that in this case outward appearances are deceptive. Here and there are glimmerings of light, sometimes possibly foreshadowing a new truth, but for the greater part the facts are either wrongly stated or altogether misunderstood by the author.

The object of this book, says Professor Talbot in the opening sentence of his preface, is to show:

"First, that the ontogeny of man, his structures and organs, is a modified recapitulation of his phylogeny in development. Second, that as the vertebral phase appears early in embryogeny, an unstable nervous system, checked by parental defects, eruptive fevers, and other agencies at the periods of stress in the child, affects phylogeny and ontogeny."

Here we have a free use of scientific terminology, but the author's meaning is beyond ordinary comprehension.

The picture given by the author of the phylogeny of man is this (p. 21):

"The embryo of man, therefore, exhibits a similar passage through vertebrate forms resembling the fish, the reptile, the bird, the lower mammal, the lower monkeys, the higher apes, until the fully developed child resembles the lower forms of mankind."

It seems strange that anyone who has seen a human embryo at any stage of development could make such an erroneous statement as this. Again, when dealing with the phylogeny of the kidneys, the author permits himself to make the following remarkable statement on renal structure:

"In mammals there is a firm, compact, oval organ. Vessels leave and enter at the hilus or notch. The central secreting portion, the medulla, is usually distinctly separated from the cortex, or outer portion which contains the straight tubules carrying the secretion to the ureters."

Such a statement makes orthodox men rub their eyes, for they have always observed the opposite—the *secretory portion* in the cortex and the straight tubules in the medulla. But even more remarkable for a scientific work is the paragraph which follows the one just quoted:

"In the kidney of the rabbit several phylogenetic changes are manifest. The shape is oval, the hilus is developed. In the ontogenetic development the relative position of the two organs shows an advance towards the kidney of man—the right being slightly in advance of the left. The substance of the kidney shows the division into cortical and medullary areas. The pelvis of the kidney is noted for the first time, forming the dilated beginning of the ureter."

Such a statement needs no comment; at no time has any rodent-like animal been looked upon as a stage in man's evolutionary history.

There is scarcely a page in this work which does not require the free use of an erasing pencil. For instance, on p. 88 this statement is made:

"Defect in either, at this period of stress, may so affect the struggle for existence between the fetal organs that reversionary conditions gain the ascendancy. This is true of such conditions as cyclopia, in which the pineal eye becomes the actual eye, as in certain lizards, while the paired eyes in man disappear."

The author of this work must have had a peculiar experience of cyclopean monsters, for in the cases examined by all other observers within our knowledge the single eye has been found to be a compound of the two normal eyes, while no irregularity has been noted in the pineal body. No mention is made of the experiments devised by Professor Talbot's distinguished countryman—Professor Stockard of Cornell University—by which cyclopean monsters can be produced at will.

We must therefore express regret that a work of this nature should come from the pen of one who has free and full access to the rich tide of embryological literature now appearing in the United States. At the present time American embryologists "lead the field."

PYELOGRAPHY.

La Pyélographie,[3] by E. Papin, is really an atlas of pyelography, the plates at the end of the volume quite overshadowing the text in importance. In the latter chief prominence is rightly given to the question of technique. After summarizing the history of pyelography the author discusses the accidents that may arise from the use of such fluids as collargol, emphasizing the precautions that must be observed in order to avoid inflicting pain and damage. Like the majority of urologists, he has abandoned the collargol and thorium nitrate in favour of a 30 per cent. solution of sodium bromide. As this, however, unlike collargol, is devoid of antiseptic properties, he adds a small quantity of mercury oxycyanide as an additional precaution. The results obtained with this solution have, in his opinion, been as successful as those previously gained from the use of 10 to 15 per cent. collargol. The injection is made by gravity by means of a burette, which is raised 50 cm. above the level of the couch. The pressure of the injected fluid can easily be controlled with this simple apparatus, the entry of the fluid being stopped immediately there is any complaint of pain. According to the author the pain of distension varies inversely with the volume of

[2] *Developmental Pathology: A Study in Degenerative Evolution.* By Eugene S. Talbot, M.S., D.D.S., M.D., LL.D., Professor of Stomatology, Bennett Medical College (Loyola University). Edinburgh: E. and S. Livingstone. 1921. (Med. 8vo, pp. 457; 346 figures. 25s. net.)

[3] *La Pyélographie.* Par E. Papin. Paris: A. Maloine et Fils. 1921. (Cr. 4to, pp. 45; 83 figures. Fr.25.)

the pelvis. The distension of a normal pelvis is accompanied with considerable pain, whilst on the other hand a large hydronephrosis may be entirely filled without causing a patient any distress.

In considering the results of pyelography Papin deals with the subject under the following headings: the normal pelvis, hydronephroses, movable kidney, anomalies of the ureter and kidney, tubercle, pyelitis and pyonephrosis, polycystic kidney. Plates illustrating these conditions are given at the end of the book. These plates are, to a great extent, diagrammatic—that is to say, although based on actual negatives, the plates have obviously been subjected to a great deal of touching up. Shadows other than the essential ones have been removed and the outline of the pelvis or of the opaque bougies, used for catheterization, considerably darkened. An immediate gain in clearness is certainly achieved by such methods, but we should have welcomed the inclusion of a few untouched negatives in the collection. The plates have been well selected and cover the ground of pyelography well. The atlas will certainly be of interest to urologists and to radiographers also. The mere fact that a work of this nature has been published is an excellent indication of the progress that pyelography has made during the last few years, and of the important position that it has reached amongst diagnostic methods.

METCHNIKOFF'S LIFE.

The Life of Elie Metchnikoff, 1845–1916,[4] written three years ago by his second wife OLGA METCHNIKOFF, has now been translated from the French, and the English version is introduced by an appreciative preface by Sir E. RAY LANKESTER, whose friendship with Metchnikoff, dating from 1888, provides some interesting personal touches. Madame Metchnikoff is eminently qualified to write the memoir of an interesting personality, not only by a married life of forty-one years, but by her knowledge of zoology, which she first acquired at Odessa from her future husband. He was anxious that this biography should be written as an interesting psychological document, and much of it was completed under his eye and with his help.

Metchnikoff was born in 1845 in Little Russia, of well-to-do but not very careful parents; he decided when only 15 years old to devote his life to natural science, and three years later had an article on the stalk of *Vorticella* in Müller's *Archiv*. His strenuous struggle as a researcher and teacher then began, and the death, after a short married life, of his first wife in 1873 led him to make an attempt, fortunately unsuccessful, on his life. He then threw his energies into anthropology and zoology at Odessa, and there met his second wife, who describes him as "at that time not unlike a figure of Christ; his pale face illumed by the light in his kindly eyes, which at times looked absolutely inspired." As a professor at Odessa his opposition to the prevalent reactionary tendencies earned for him the reputation of an *enfant terrible*. In view of recent discussions it may be interesting to record his opinion that although women cannot accomplish creative work in science their higher education is necessary for their general intellectual development. In 1881, when intensely neurasthenic, he again resolved to end his life, and in order to spare his family the sorrow of an obvious suicide he inoculated himself with the spirillum of relapsing fever, choosing this method to determine if this disease could be communicated in this manner; he recovered, but the severe attack was thought to have increased or originated the cardiac condition that eventually caused his death. Political difficulties led to his resignation, and he started laboratory work at Messina, where he considered that the great event of his scientific life occurred in the conception of phagocytosis, which suddenly burst on his mind and transformed him into a pathologist; the first account of this work was published in 1883. After a brief return to Odessa in 1886, he finally found a congenial atmosphere at the Pasteur Institute in Paris, where his wife at first acted as his assistant. Though his life now ran on happy lines, the bearings of phagocytosis on immunity involved him in many years of scientific controversy, especially with Germans.

When 53 years old his attention was directed to the problems of premature old age, its relation to chronic toxaemia of intestinal origin, and of the postponement of old age and death to their natural term, or the achievement of "orthobiosis," the philosophy of the normal cycle of life. In this connexion he did his well-known work on syphilis and on the sour milk diet. His conclusions were subsequently collected in his book, *Forty Years' Search for a Rational Conception of Life*. A born biologist, he became a pathologist inspired by the purest philanthropy and by optimism. In 1913 he had a severe cardiac attack and began to prepare for death, although in order to gain support for his contentions as to the proper mode of life he was anxious to reach the age of 70. The story of his long struggle with cardiac failure, lasting till June, 1916, is told with great pathos by his talented wife, who has combined in an unusually admirable manner an account of the scientific activities and the human aspects of a really great man.

[4] *The Life of Elie Metchnikoff, 1845–1916*. By Olga Metchnikoff. With a preface by Sir E. Ray Lankester, K.C.B., F.R.S. London: Constable and Co., Ltd. 1921. (Med. 8vo, pp. 307; 1 photograph. Price 21s.)

PHYSIOLOGY.

The new edition of Professor CATHCART'S *Physiology of Protein Metabolism*[5] contains, boiled down and in assimilable form, a great deal of information about the fate of proteins in the body, a subject that has given rise to a vast amount of experimental work. After chapters on the digestion and absorption of protein, and on the converse process — its regeneration — the author discusses alimentation with pre-digested protein and with the de-aminization of the protein molecule. Other chapters deal with the protein requirements of the body, the various theories of protein metabolism hitherto advanced that leave us still in the dark, starvation, work, and with protein saving by means of carbohydrate and fat. The book is well written, and the reader is in general left to make up his own mind on any point after the evidence has been put before him. The volume may be warmly recommended to the attention of advanced students of physiology. It has, we believe, no serious rival.

The second edition of Professor WALTER JONES'S *Nucleic Acids*[6] gives a full account of the chemistry and physiology of an important group of the proteins, that which is intimately connected with the purine bodies in the human organism. An appendix at the end of the book describes methods of preparing several of the nucleic acids and other chemical substances mentioned in the text; a full bibliography is appended. The author notes that while the lower animals, from monkeys downward, possess the power to convert uric acid into the more soluble allantoine (a step in purine metabolism), the apes and man have no such power. The book is suited to the chemist and students of physiological chemistry.

The laboratory manual of *Practical Physiological Chemistry*,[7] by Dr. J. A. MILROY and Professor T. H. MILROY, now in its third edition, provides the senior and junior student and also the medical student throughout his career with a full and practical account of the subject with which it deals. The text suggests, as is of course the case, that the authors have had considerable experience in teaching; the detailed descriptions of the way in which the experiments should be carried out leave nothing to be desired. The first 250 pages are devoted to qualitative analysis; then follow 130 pages on quantitative analysis. Various useful tables are given in an appendix, and several schemes for the detection of many substances of physiological importance are appended. Two coloured plates show the absorption spectra yielded by the blood pigments and some of their derivatives. The book is well

[5] *The Physiology of Protein Metabolism*. By E. P. Cathcart, M.D., D.Sc., F.R.S. Second edition. Monographs on Biochemistry. London and New York: Longmans, Green and Co. 1921. (Roy. 8vo, pp. 182. 12s. 6d. net.)

[6] *Nucleic Acids: their Chemical Properties and Physiological Conduct*. By W. Jones, Ph.D. Second edition. Monographs on Biochemistry. London and New York: Longmans, Green and Co. 1920. (Roy. 8vo, pp. 158. 9s. net.)

[7] *Practical Physiological Chemistry*. By J. A. Milroy, M.A., M.D., and T. H. Milroy, M.D., B.Sc., F.R.S.E. Third edition. Edinburgh and London: W. Green and Son, Ltd. 1921. (Demy 8vo, pp. 457; 3 plates, 20 figures. 21s. net.)

got up and illustrated, and may be recommended to the attention of students of medicine.

Dr. HARRIS's *Practical Histology for Medical Students*[8] is a manual for the laboratory bench. The text is on the left-hand pages, and consists of summary descriptions of the methods to be employed in the preparation of histological specimens from the material and tissues usually studied by medical students. The right-hand pages are reserved for drawing of the corresponding preparations or slides by the student after he has made them. The book endeavours to give the student the minimum of normal histology necessary for his future studies in pathology, and in this it should prove successful; the addition of an index would make it more serviceable.

CLINICAL SURGERY.

THE plan of Professor HERTZLER's new book on *Clinical Surgery by Case Histories*[9] is somewhat novel. He has adopted a regional basis of classification, but the volumes are made up of a series of case histories which follow one another in a constant stream. For instance, to select from three sections at random: "I was called to see a man, aged 45, because he had persistent pain in the left side of his head and neck following a mastoid operation"; "A farmer came to the hospital because of a sinus in the left side"; "A merchant, aged 36, came because of stiffness of his fingers." The advantage of such a method is, of course, that one begins to read the history of the case without the bias that would have been ours if the section had been labelled "Cerebral abscess," "Empyema," and so forth. The reader has no more knowledge of what the condition will prove to be than had the clinician when first confronted with the case. Thus "a man found unconscious at the foot of a stairs" (p. 57) proved to be a uraemic subject, whilst "a housewife, aged 58, found lying on the hospital steps" (p. 444) had a fracture of the neck of the femur. Vol. I contains diseases of the head, neck, thorax and extremities, and is illustrated by 284 photographs and drawings, of which the author evidently has an unusually fine collection. Vol. II deals with diseases of the abdominal and genito-urinary organs; it has 199 illustrations and contains an index. We imagine that this book will more easily find a sphere of usefulness in the United States than it will in this country. There is not much in it for the skilled surgeon, in spite of the, at first sight, rather intriguing method of arrangement. It is rather the book for the "occasional operator" in the small town. Yet few will be able to resist the temptation of turning over the pages and glancing through the clinical histories which are frank, unvarnished, and "uncooked." The book is excellently produced.

NOTES ON BOOKS.

THE seventh edition of Professor BOAS'S[10] diagnosis and treatment of diseases of the stomach provides the specialist with an account of a subject in which the author has a reputation as an expert. It is divided into two equal parts. The first details the examination of the patient and the methods of investigating his processes of gastric secretion and digestion; many varieties of gastroscope (an instrument for inspecting the gastric mucous membrane) are described, but their employment is not recommended. The general treatment of gastric disorders is set out in some hundred pages, and balneotherapy, which plays a large part in Germany, is fully dealt with. The second part of the volume deals with the symptoms, diagnosis, and treatment of the various diseases of the stomach, and is full of practical statements and directions. Professor Boas[11] has also published a smaller volume on diet in diseases of the stomach and intestines, with an appendix by Professor Kelling on the feeding of patients before and after operations on the alimentary tract. Both these volumes reflect current practice in Germany; in neither is attention paid to the methods or treatment employed by physicians or specialists in other countries, a fact that appreciably lessens their value outside the country of their origin.

The second edition of Professor BING'S textbook of nervous diseases[12] consists of thirty lectures in which these disorders are discussed at full length, mainly from the clinical point of view. The matter is well arranged and clearly set forth, and is illustrated by a number of adequate diagrams and photograms. In the account of Graves's disease we notice that Professor Bing describes it as discovered "simultaneously" about the year 1840 by Graves and Basedow. As a matter of fact, Graves described it in 1835, Basedow in 1843. Blunders of this kind are not common, and on the whole, Professor Bing writes with knowledge and experience; his book may be recommended to medical students and medical men in search of a textbook of neurology in German.

The second edition of Dr. WOODWARK'S *Manual of Medicine*,[13] described by the author as a *vade mecum* for students and general practitioners of medicine, preserves the characteristics of the first edition. It consists of ten sections in which the disorders of the various parts or systems of the body are considered, with, at the end, an account of the acute specific fevers. Every page bristles with summarized and often tabulated knowledge, and the volume may fairly be said to contain a great deal of information as to the etiology, pathology, symptomatology, course, and treatment of the many diseases considered in it. The *Manual* is well up to date, and may be recommended to those who like their medical knowledge presented in pemmican form. It suffers from the disadvantage, common to all books of this type, that it appeals to the memory only and does not tax the intelligence.

SMITH'S *Physicians' and Surgeons' Visiting List for 1922*[14] is a neat little volume for the pocket. It contains thirty-two pages of information and tables generally useful to the medical man; then follow the diary, with a week to each page, pages for obstetric and vaccination engagements, and pages for memoranda of various kinds. The volume is well bound and furnished with a pencil and a pocket for papers.

BARNETT and THORNE'S *Organic Analysis, Qualitative and Quantitative*,[15] provides students of chemistry, particularly those reading for a university degree, with a sound scheme of analytical methods that should be of educational value to those that use it. The book goes far beyond the requirements of the medical student, although he too could gain much profit from the pages given to the use of the polarimeter. It is clearly written and well illustrated.

[8] *Practical Histology for Medical Students.* By D. T. Harris, M.B., B.S., B.Sc. London: Langley and Sons, Ltd. 1920. (Double cr. 8vo, pp. 34.)

[9] *Clinical Surgery by Case Histories.* By Professor A. E. Hertzler, M.D., Ph.D., F.A.C.S., University of Kansas. Vol. I: Head, Neck, Thorax and Extremities; Med. 8vo, pp. 562; 284 figures. Vol. II: Diseases of the Genito-urinary Organs; pp. 546; 199 figures. London: Henry Kimpton. 1921. (£5 net the two volumes.)

[10] *Diagnostik und Therapie der Magenkrankheiten.* Von Professor I. Boas. Siebente, völlig neubearbeitete Auflage. Leipzig: G. Thieme. (Roy. 8vo, pp. 677: 70 figures, 6 tables. M. 138.50; bound, M. 155.50.)

[11] *Diätetik der Magen- und Darmkrankheiten.* Von Professor Dr. I. Boas. Nebst einem Anhang: Diätetik vor und nach operationen am Magen-Darmkanal, von Professor Dr. G. Kelling. Leipzig: G. Thieme. (Sup. roy. 8vo, pp. 221. 6s. 9d.; bound, 8s. 3d.)

[12] *Lehrbuch der Nervenkrankheiten für Studierende und praktische Aerzte.* In 30 Vorlesungen. Von R. Bing. Zweite, vermehrte und vollständig neubearbeitete Auflage. Berlin and Vienna: Urban and Schwarzenberg. 1921. (Sup. roy. 8vo, pp. 680; 162 figures. Geb. M.100. Geb. M.130.)

[13] *Manual of Medicine.* By A. S. Woodwark, C.M.G., C.B.E., M.D., F.R.C.P. Second edition. Edinburgh, Glasgow, and London: H. Frowde, and Hodder and Stoughton. (Cr. 8vo, pp. 500; 3 plates, 16s. net.)

[14] *Smith's Physicians' and Surgeons' Visiting List, Diary, Almanac, and Book of Engagements for 1922.* No. 2 edition. London: Hazell, Watson, and Viney, Ltd. 6½ by 3¼, pp. 32 + engagement columns. Cloth, 7s. 6d.; roan, 8s. 6d.; morocco, 10s.)

[15] *Organic Analysis, Qualitative and Quantitative.* By E. de Barry Barnett, B.Sc.Lond., F.I.C., and P. C. L. Thorne, M.A.Cantab., A.I.C. London: University of London Press, Ltd. 1921. (Demy 8vo, pp. 179; 31 figures. 7s. 6d. net.)

APPLIANCES AND PREPARATIONS.

An Obstetric Chart.

DR. BETHEL SOLOMONS (Dublin) has sent us a specimen of an obstetrical clinical chart recently made for him by Messrs. Fannin and Co. At the head is space for the name and age of the mother, the place of the child in the family, and its sex. This is followed by a chart of the mother, which shows temperature, pulse (morning and evening), motions (day and night), urine (day and night), lochia (morning and evening), and day of puerperium. Underneath there is a chart for the baby, showing motions (day and night), feeds (day and night), when cord is off, and weight. In the margin space is provided for remarks. The chart is compact and well designed; its habitual use will ensure records of a complete kind on a uniform system. The charts are sold at 1s. 6d. a dozen.

THE LONDON SCHOOL OF TROPICAL MEDICINE.

The annual dinner of the London School of Tropical Medicine was held at the Trocadero Restaurant on November 9th, under the presidency of Lieut.-Colonel A. W. Alcock, C.I.E., F.R.S., I.M.S., Professor of Medical Zoology in the University of London, to which the school is attached. Just over a hundred members of the teaching and administrative staff, past and present students, and guests sat down at the tables.

Past, Present, and Future.

Professor Alcock, in proposing the toast of the School, said that the institution had now well come of age, and its twenty-first year was a turning point in its history. He had no need to remind anyone present that the idea of the school emanated from Sir Patrick Manson. The wonderful originality of that great man was revealed many years ago, when, amid the exigencies of a busy practice, he carried through those exact experiments—a habit rare among general practitioners—which opened out new domains of pathology and preventive medicine, of which the school was only one of the results. But that fine idea of Sir Patrick Manson might have come to nothing if it had not been imparted to a statesman of vision in Mr. Joseph Chamberlain, then Secretary of State for the Colonies, who instantly grasped its full significance. Even then the idea might not have struck root so deeply nor borne fruit so soon had it not been for the Seamen's Hospital Society. He had often been asked what there was in common between a hospital for merchant seamen and a school of tropical medicine. It needed only a moment's thought to realize that in the scheme of the British Empire the two things went naturally together. The life of the crowded population of these islands depended for the most part on the raw material which the seamen brought from other shores. What better help could be given to those seamen than to provide healthier ports of call in the rich tropical dominions from which they brought their cargoes? Who could think of our immortal Drake, the founder of our sea power, cut off by dysentery in his mid-fifties, or of our incomparable Nelson, sent home invalided and not expected to recover from the effect of his two years' service on the East Indies station, without understanding something of what tropical disease—and therefore tropical medicine—might mean to the destinies of these isles. (Applause.) It was to the everlasting credit of the Seamen's Hospital Society that it set its seal upon these truths by an instant and generous response to the grand design of Manson and Chamberlain. It might be doubted whether even the medical profession realized the debt it owed to the Seamen's Hospital Society for its courage and enterprise in starting this great educational experiment.

During the life of the school seventeen expeditions had been sent out to investigate various problems of tropical disease, and more than two thousand medical men had gone through the school's course; these had been men of every race and nation from China to Peru, destined to fill all kinds of positions in the tropical world—medical officers of plantations, of railways, of industrial concerns in those regions, as well as medical missionaries and private practitioners. The school kept its laboratory in close touch with the wards of the hospital. So practical was the course, so full of demonstration and exhibition, so faithful in the mirror it held up to Nature, that even students who knew little or no English were able to go through with it. He knew from his own experience the difference in outlook between the man who went to his work in the tropics by way of the London School or the sister institution at Liverpool and the man who, however keen, never had that chance. The vicissitudes of the school, as of all human institutions, in twenty mutable years, were not to be forgotten. In the fullness of time Sir Patrick Manson had to relinquish his participation in the school's work. Sir Patrick was the *pontifex maximus*, the patriarch of tropical medicine. While he was with the school the eyes of the world were upon it. Wise men came from the West as well as from the East to leave their blessing with his foundation. The school again suffered severely in the loss of Dr. C. W. Daniels, a man who, though he did not wear his heart upon his sleeve or affect the graces of the courtier, was to be picked out of 10,000 men, and for his experience, insight, breadth of outlook, and solid worth of judgement, was fit to sit with Manson in the gate. If such losses could ever be recompensed by material gains—which he doubted—the school in its twentieth year had an accession of fortune which might satisfy the materialist if that was ever possible. It arose in this way. In the war the sturdy British sailor had gone on his lawful occasions, little concerned for himself, though hell gaped on every side of him, and in admiration for his valour and sympathy with his suffering the British Red Cross Society and the Order of St. John bestowed upon the sailor through the Seamen's Hospital Society the very appropriate gift of the hospital in Endsleigh Gardens. The Society resolved to remove the school to the new hospital, and through the personal interest of Lord Milner and the liberality of the citizens of London the removal was accomplished from the docks to a very much more academic quarter.

In one branch of work the school now showed a deficiency exactly where, from its close association with such an important adjunct of the mercantile marine as the Seamen's Hospital Society, it ought to show a conspicuous excellence: this was in tropical sanitation. The school would certainly not fulfil its expectations if it did not soon provide a course in tropical sanitation, practical and adequate for the man who meant to take up the important subject of preventive medicine in the tropics. The authorities of the school were aware of the need, and only lack of money prevented them from meeting it. He hoped it would not be forgotten that the tropics, where Manson and Bruce and Ross made their fruitful discoveries, was the proper place for the study of the causation and consequences of tropical disease, but he did not think that this sort of work need be done any longer by means of costly and ostentatious expeditions from home. Such expeditions had had their day. They were necessary at the beginning to awaken public opinion at home and to stimulate local effort abroad, but now that influential men at home understood the importance of the subject, and that institutes for medical research had sprung up in so many of the tropical dominions, while a steady stream of men trained in London or Liverpool was flowing to the tropics year by year, these large expeditions from home might do more harm than good by appearing to disparage those local efforts which it was so extremely necessary to foster and encourage. The policy of the school should be to co-operate with these indigenous institutes, to try to develop a common life with some of them, and this might be most economically done by allocating here and there a member of the staff, especially a junior member, to maintain touch and to work in association with them. But there was one most promising branch of research which for climatic and other reasons was better attempted in a tropical hospital at home than in the tropics themselves: the application of biochemical methods to the study of tropical pathology. That was a study with such infinite possibilities that, whether it was regarded from the scientific standpoint as likely to raise the whole of pathology to a higher level, or from the practical standpoint as affecting the interest of patients, if the school did not go on to provide for some such study it would fall below the modern academic standard. Another lack in the school was of a different kind. When it was brought from dockland it left behind its mess. The loss of the mess was an intellectual and educational deprivation. Carlyle said rightly that men who had nothing else in common could find comfort and counsel in feeding together. How much more could men who had varied professional experiences from all parts of the world profit from the opportunity to sit at meat together and smoke a pipe together!

Those were the three present needs of the school: a department of tropical sanitation, a department of biochemistry, and a mess. The school, in shifting its quarters, also suffered from that fitful fever known as reconstruction and reorganization, with its aggravating symptom known as co-ordination. From such complaints a society would never recover until the theorist understood, what every biologist knew, that a too nicely contrived and balanced organism usually came to grief by the weight and friction of its elaborate devices, and that true co-ordination, instead of being some wonderful arrangement for running a ship without a captain, depended on a specialized and centralized professional administration, which was the first requisite

for unity, concord, and success. (Applause.) He hoped it would come to pass that the school would be administered in all professional matters—in everything outside finance—not by a distracting multiplicity of committees and sub-committees, but by a single medical council, responsible to the board of governors. (Applause.) Finally, he recounted some mercies for which to be thankful. The school had come into intimate association with that other fine and well-designed missionary organization for propagating knowledge and promoting study of tropical diseases—namely, the Tropical Diseases Bureau, which was now housed under the same roof. Then again, through the kindness of the Air Ministry, the school had lately been able to make a start with a field laboratory for the study of entomology. The staff also had been strengthened by the inclusion of several distinguished men greatly experienced in tropical diseases, including Sir Leonard Rogers. The school would soon be in possession of a portrait that did some justice to its venerable and illustrious founder—a portrait which might stir them to emulation in some measure, as the presence of Manson in the flesh had done—

> For emulation hath a thousand sons
> That one by one pursue.

The Mansonian Tradition.

Colonel R. H. Elliot, I.M.S., proposed the health of the guests, and made special mention of Professor J. W. Stephens, of the Liverpool school—a school which was the friendliest of rivals to the school in London—and Sir William Leishman, whose name would go down into history as one of the greatest of our empire builders. Tropical medicine was so young that its founders were still with us, and therefore we failed to realize what great figures they would appear to those who came after.

Sir William Leishman, in responding, referred to the genial and stimulating warmth which was always to be gained in an association of medical men interested in the tropics. He believed that workers in tropical medicine were more companionable than men in other branches of medicine, and the keen edge of their discussions never had any venom. They had lived under the sun, and the sun had compelled them to shed not merely their clothes but their armour of reserve. He paid a tribute to the Colonial Medical Service, with whose work he had lately been impressed while serving on a Colonial Office Committee concerned with tropical Africa. He begged those present to remember on Armistice Day their recent comrades in the regular service. His message from his own corps was that the regular service could never forget the magnificent help given by the civil profession during the war.

Colonel J. J. Pratt, I.M.S., in highly appropriate language, expressed the general sentiment towards the Chairman of the evening, remarking upon his modesty and high attainments.

Professor Alcock, in response, quoted Hamlet, "Use every man after his desert, and who shall 'scape whipping?" The part he had taken in the school during the last fourteen years was a very small one. He joined because he was impressed with the fact, as a zoologist in India, that 80 per cent. of tropical disease was due to animal parasites, and thought this fact needed teaching. He had the advantage of 22 years in the Indian Medical Service—a service so full of distinguished names as to keep the conscience quick and the temper humble, so full of varied opportunities as to keep the intellect always alert and interested, and so full of professional responsibility as to keep the judgement always sober and reflective. He came to the school also because he would number Manson and Daniels among his colleagues, and might have a hand in shaping future Mansons, inheritors of the Mansonian tradition, which was to emphasize the fact that all pathology, especially tropical pathology, was a branch of biology, and that all living medicine was really biology applied. He added that if he had been successful in any small way at the school it was because of the instant help of the Secretary (Sir James Michelli), who was like one of nature's own patient, silent, constructive forces. (Loud applause.)

Sir A. W. Clarke, deputy chairman of the governing body, announced that H.R.H. the Duke of York had agreed to become president of the group of charities with which the London School of Tropical Medicine is associated, in succession to late Marquess of Milford Haven.

THE TREATMENT OF LEPROSY.

The only lepers met with nowadays in England are those rare cases which have been infected abroad. Leprosy has been for so long, however, an example of a slow incurable disease, and has so many historical associations, that any possible cure of this disease is of great general interest.

Chaulmoogra Oil Derivatives.

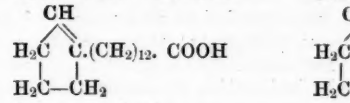
During the past ten years different workers in different quarters of the globe have developed the technique of the treatment of this disease by derivatives of chaulmoogra oil, and although it is too early to claim that the disease can be permanently cured, yet there appears to be every possibility that these drugs will afford a true specific cure for leprosy. This would mark a very important advance in specific therapeutics, for until now all the triumphs of chemiotherapy have been over protozoal diseases, and leprosy will be the first disease of bacterial origin to be cured by a specific internal disinfectant.

Chaulmoogra oil has been used in the treatment of leprosy for more than thirty years. It was formerly believed to be derived from the seeds of *Gynocardia odorata*; the true origin of the oil was discovered in 1901 by Sir David Prain, who showed that it came from the seeds of *Taraxtogenos kurzii*, a tree which grows in Assam and Burma.

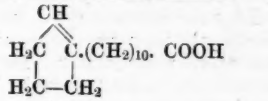
Chaulmoogra oil is an evil-smelling and intensely irritant oil, which rapidly produces gastric disturbance if given by the mouth. For fifteen years it was given in intramuscular injections by Dr. Hopkins in Louisiana and by Dr. Heiser in the Philippines, but the injections were very painful, and although they undoubtedly produced benefit, yet the patients usually discontinued treatment as soon as their symptoms were at all alleviated.

Chaulmoogra oil contains two fatty acids, chaulmoogric and hydnocarpic acid. Hydnocarpic acid was formerly termed gynocardic acid; these acids have been recently isolated by Dean and Wrenshall,[1] who have assigned to them the following formulae:

Chaulmoogric acid, $C_{18}H_{32}O_2$.



Hydnocarpic acid, $C_{16}H_{28}O_2$.



If these formulae are correct the acids are unique, for no other fatty acids with similar five carbon rings are known.

The progress made in the treatment of leprosy has been due chiefly to the substitution of non-irritant derivatives of these acids for the irritant chaulmoogra oil. Sir Leonard Rogers,[2] working in India, used the sodium salts of chaulmoogric and hydnocarpic acids. The preparations he had at his disposal were too irritant for repeated subcutaneous or intramuscular injections, but could be given intravenously. He used a dose of 0.2 c.cm. of a 3 per cent. solution twice a week intravenously, the dose being gradually increased to 5 c.cm. once a week. This treatment he found produced a great improvement in the majority of patients within three months, and treatment for six to twelve months removed all clinical symptoms in a large proportion of patients. He recommended a further treatment for a year to avoid relapses. The results obtained in many instances were extremely striking; in some cases of leprosy of twenty years' standing the treatment removed all clinical signs of disease. Microscopic examination of the leprosy nodules showed that the treatment produced a rapid destruction and disintegration of the bacilli in the nodules.

Rogers also tried the effects of other unsaturated fatty acids, and found that sodium morrhuate, the sodium salt of the unsaturated fatty acids of cod-liver oil, produced even better results than sodium hydnocarpate. In one series of 51 cases treatment with hydnocarpate caused marked improvement in, and rendered bacteriologically sterile, 41 per cent. of the cases, and a further 39 per cent. were improved. The Mission for Lepers in India treated 183 cases with sodium hydnocarpate and 117 cases with sodium morrhuate; the treatment was not concluded at the time of the report, but marked improvement had

been produced in 70 per cent. of the cases. The results of Rogers with sodium morrhuate have not yet been confirmed by workers outside India.

Dean[3] in Honolulu treated leprosy with the mixed ethyl esters of the acids of chaulmoogra oil, to which 2 per cent. of iodine was added. The esters were given intramuscularly and by the mouth, six times as much being given by the latter as by the former route. This treatment was very successful, and it was found possible to release on parole 50 per cent. of the lepers treated, as being clinically cured and non-infectious.

Dean found on further researches that a purer and more fluid product, which was more readily absorbed, could be obtained by distilling the esters *in vacuo*. He also concluded that the results produced by intramuscular injection alone were as good as those obtained by combined intramuscular and oral administration. The absence of irritation with this preparation is shown by the fact that out of 6,924 intramuscular injections given only one produced an abscess.[4] He also concluded that the pure esters were just as efficacious without the addition of iodine,[5] and that hydnocarpic acid was more efficacious than chaulmoogric acid, and that probably the acids with the lowest boiling point were most effective. This suggests the possibility of finding derivatives of these acids of even greater therapeutic efficiency.

Walker and Sweeney[6] examined the action of the acids of chaulmoogric oil upon acid-fast bacilli *in vitro* and found that these acids produced a specific disinfectant action upon these organisms. This observation suggests the possibility of these substances acting in a beneficial manner upon tuberculosis, but experiments by Rogers, and by Voeghtlin Smith and Johnson[7] upon the action of these substances upon tuberculosis in animals have yielded negative results.

The results obtained by the treatment of leprosy with derivatives of chaulmoogra oil are of the very greatest interest; the reports cover a period of twenty years and deal with many hundreds of cases. The reports show that these drugs will alleviate the great majority of cases of leprosy, and apparently will cure completely about 50 per cent. Some years must elapse, however, before it is certain that these apparent cures are permanent.

Leprosy has always been regarded as an example of an absolutely incurable disease, and hence these results are the more noteworthy. Moreover, the drug can be shown actually to cause the rapid destruction of bacteria living in the body; this represents a very great advance, and shows that it is quite possible that a specific cure may be found for tuberculosis. The development of the treatment is also of interest, because the fact that chaulmoogra oil has an action in leprosy has been known for thirty years. No really effective treatment could, however, be devised until fairly pure preparations of the active principles of the oil had been obtained. The advance in the treatment is, therefore, very largely a triumph for organic chemistry.

Messrs. Burroughs and Wellcome have prepared a preparation of the esters of chaulmoogra oil which they call Moogrol. The preparation contains no iodine; it is a clear oily fluid which does not produce any marked signs of irritation when injected subcutaneously into animals, and is intended for intramuscular injection. The dose is 1 c.cm. rising to 6 c.cm. for each injection. The price is 30s. for a bottle containing 100 c.cm.

Action of Antimony.

Cawston[8] has reported from Natal that injections of antimony produce a markedly beneficial effect in leprosy, and that he found colloidal antimony (oscol stibium) to be the most suitable antimony preparation for injection because it was not irritating. He found that doses up to 12 c.cm. of oscol stibium when injected intramuscularly produced no local irritation and no general toxic effects. The number of cases reported as improved by this treatment is, however, very small, and it is impossible to form any opinion as to its value until the results of a far more extended trial are published. The evidence that antimony is of benefit in leprosy in no way compares with the evidence obtained for the action of chaulmoogra oil.

Oscol stibium is prepared by Messrs. Oppenheimer and Co., and is a colloidal preparation of antimony sulphide Sb_2S_3; it contains 0.05 per cent. of antimony. Like other colloidal metals, it is a suspensoid colloid, and, since it is not ionized, it naturally does not produce irritation. One grain of antimony is contained in 120 c.cm. of the solution, and 40 c.cm. contains about the same amount of antimony as 1 grain of tartar emetic. The fluid is naturally of low toxicity.

Colloidal preparations are a convenient form in which small quantities of metals can be injected without inducing local irritation, but there is no reason to suppose that they enter the general circulation until they have been ionized. The available evidence indicates that they act in a manner similar to non-colloidal preparations of metals, except that they do not produce local irritation and are absorbed rather more slowly.

These remarks are prompted by the literature Messrs. Oppenheimer circulate with these preparations; in it the following statement occurs: "This example seems clearly to indicate that, to perform efficiently the function required of it, a drug must either be in the colloidal state at the moment of administration, or be capable of conversion into that state inside the body." This statement is certainly incorrect for the vast majority of drugs, and we know of no facts in pharmacology which in the least support any such general conclusion.

References.

[1] Dean and Wrenshall: *Journ. Amer. Chem. Soc.*, 42, 2626, 1920. [2] Rogers: *Medical Press*, June 15th, 1921. [3] Holman and Dean: *Journ. of Cutan. Dis.*, 37, 367, 1919. [4] *Journ. Amer. Med. Assoc.*, 75, 1484, 1920. [5] McDonald and Dean: Ibid., 75, 1470, 1921. [6] Walker and Sweeney: *Journ. of Infect. Dis.*, 26, 238, 1920. [7] Voeghtlin Smith and Johnson: *Journ. Amer. Med. Assoc.*, 77, 1017, 1921. [8] Cawston: BRITISH MEDICAL JOURNAL, 1921, i, 419.

RESEARCH DEFENCE SOCIETY.

THE Research Defence Society was founded in 1908 with the object of enlightening the public on questions relating to animal experiment and methods of medical research generally; in particular it was intended as a unit which would meet, on behalf of professional workers, the constant attacks, some misguided and some unscrupulous, made upon them by individuals or by societies of antivivisectionist persuasion. It was intended to record year by year instances in which experiment upon animals has been successful in throwing light upon or actually combating processes of disease, and to expose the unwarrantable statements of its opponents, by distributing at suitable intervals authoritative statements, written in language which could be appreciated readily by any intelligent lay reader. Recently, since the Jenner Society has been merged with it, it has undertaken similar work in opposition to antivaccination organizations. In these subjects the society has enjoyed a very large measure of success.

The society since its inauguration has obtained the active support of a large number of medical men, and enjoys the patronage and support of very many distinguished and enlightened laymen. Its success has been sufficient to encourage its council to further efforts; it is especially desired that the society be placed in closer contact with the general practitioners of the profession. Since the medical profession, of all sections of the community, is obviously in the best position to appreciate the ultimate merits of experimental work, and since all but an insignificant proportion of medical men in this country realize how important it is that physiological and pathological research should be placed under no further legal restrictions, the society believes that a rapid and thorough extension of its work can be obtained by the co-operation suggested. While it is realized that difficulties stand in a medical man's way should he become an active propagandist, yet it is well known that many opportunities present themselves to medical men, during the course of their professional work, of influencing opinion in the right direction. The society appeals to individual members of the profession to use these opportunities where they reasonably can do so, and especially to place facts before members of the Houses of Parliament. The society also invites all members of the profession to enrol themselves as members

or as associate members of the society, or to associate themselves with the society upon the following terms:

1. *Full Membership.*—By subscribing to the society 10s. per annum, receiving in return the published reports and pamphlets of the society free of cost.
2. *Associate Membership.*—By subscribing to the society 5s. per annum, and receiving in return such reports and pamphlets of the society as are desired at cost price.
3. *Association.*—By requesting the publications of the society to be sent to them at cost price, or by requesting that there shall be sent to them at cost price such pamphlets as would be of particular use to them in propagating knowledge of methods used in medical research work.

A postcard will elicit further particulars from the Secretary, Research Defence Society, 11, Chandos Street, Cavendish Square, London, W.1.

WOOD TAR OILS FOR THE DESTRUCTION OF LICE (PEDICULUS HUMANUS) ON HAIR-CLAD AREAS.

During the war, at the request of the War Office, I tested the efficiency of a by-product of the Department of Propellants, entitled "light wood tar oil," for use as an insecticide. It proved to be very serviceable for the destruction of lice, and I recommended it for use in the treatment of verminous heads as cheap, safe, and efficient.[1] It was also recommended as a basis for the preparation of culicifuges.[2]

In the spring of last year, while acting as entomologist to the Typhus Research Commission of the League of Red Cross Societies in Poland, I suggested the use of a sample of this oil, which I had with me in Warsaw, for use as an additional precaution in the clearance of lice from typhus patients. The Commission found it very effective, but were unable to obtain further supplies.

Since my return from Poland I have been unable to ascertain the existence of any further supplies of this particular oil, but through the courtesy of a late official of the Department of Propellants, I have been able to get into touch with two firms who are able to supply wood tar oils and wood oils of a somewhat similar description. These firms have kindly supplied me with samples with which I have carried out a number of tests, using a sample of the original "light wood tar oil" and an East Indian mineral lamp oil (called by the trade name of paraffin) as controls.

My object was limited to ascertaining by laboratory tests the probable efficiency of these oils for use in the destruction of lice on the hair of the body or the scalp.

Method of Testing.

1. A male, a female, and a nymph of *Pediculus humanus* (*capitis*), the head louse, were immersed in the oils for two minutes and then placed on dry flannel to recover in the event of their survival. The result was that they were invariably killed.
2. As above, but immersed for thirty seconds only. The result was that all were killed.
3. Immersed as above for thirty seconds, but placed on absorbent filter paper after immersion. The males and females were killed, the nymphs sometimes recovered.
4. Instead of immersing the insects, a small drop, large enough to immerse a part but not the whole insect, was placed on the thorax of each specimen while it rested on absorbent filter paper. This experiment was performed twice. In both series the paraffin failed to kill any of the insects, which either never lost their activity or soon recovered it. The wood oils were considerably more effective, rendering most, if not all, the insects immobile for a time and generally killing one or more of the adults; the nymphs, which are more resistant, usually recovered.

There is therefore an element of chance in the killing of a louse by a drop which does not envelop the whole of the body, and this renders the thorough treatment of the hair down to the skin essential. Death depends on the penetration of the oil into the louse, and should it run off the wax-like surface of the skin or be rapidly absorbed by any fabric which comes in contact with the insect penetration is unlikely to ensue.

All the wood oils tested gave equally good results, but a watery fluid named "Furfurol" liquor, apparently consisting of water and some free oil, was found to be entirely ineffective in these trials.

[1] Danger of Disease through Lice, London County Council Education Committee, May, 1919; and Lice, *School Hygiene*, March, 1919.
[2] The Comparative Efficiency of Certain Culicifuges, *Parasitology*, February 28th, 1919.

The efficient oils are described as follows:

Messrs. Shirly Aldred and Co., Ltd., Worksop. Sample A, "wood creosote." Sample B, "light wood oil."

Messrs. R. W. Greeff and Co., Ltd., Thames House, Queen Street Place, London, E.C.4. Samples A, B, and C, Swedish wood tar oils.

As these oils are used for such trade purposes as flat-oiling wood to protect it from rot, etc., they should be obtainable at prices sufficiently moderate to enable them to be used more freely than the essential oils or proprietary articles which are frequently recommended. They should, in fact, prove even cheaper than the mixture of olive oil and paraffin which has been so widely recommended. If purchased in quantity, samples should first be obtained and tested to ascertain if any irritation of the skin is caused. The particular samples supplied caused my skin no irritation. It is necessary, however, to state that a very wide range of susceptibility exists in regard to the sensitiveness of the skin.

Conclusions.

My conclusions in respect of the use of such wood oils for the destruction of vermin in hair are as follows:

1. Nymphs should always be used in control tests, because, owing to the protection afforded by the double skin with which they are temporarily endowed when moulting, they are far more resistant than adult lice.

2. No absorbent material should come in contact with the treated area for a period (as long as possible up to an hour); greased or waxed paper or rubber-surfaced articles should for preference be used to cover the hair after treatment.

3. In treating hair-clad areas by spraying or other methods the oil must be used liberally so as to render the complete immersion of the vermin in droplets of the oil probable.

4. The oil should always be used neat, or if for any reason it is necessary to economize it, the fluid added should either be another oil or some fluid with which the oil is miscible. It must be borne in mind that volatile fluids, though frequently increasing penetration, shorten the period of action. Hence the effective nature of such remedies as olive oil and paraffin, where both the slow penetration of the heavy oil and the rapid evaporation of the light mineral oil are compensated for by mixing the two.

5. A repetition of treatment is always desirable within a few days. For typhus work a second treatment is essential in case eggs may have escaped the first treatment, because such eggs may hatch while the patient is still infective, and the lice after feeding be transferred to a nurse or doctor.

6. The objectionable odour of paraffin can always be covered by the addition of a small quantity of an essential oil or other scent such as oil of mirbane (nitro-benzol), camphor, etc. Camphor has an additional advantage in that it has the property of allaying skin irritation.

A. Bacot,
The Lister Institute of Preventive Medicine.

In 1918 the deaths from influenza in Germany (excluding the two Mecklenburg States) numbered 185,815. Between the ages of 15 and 30 the deaths numbered 54,828.

Professor H. Dold, of the Institute for Experimental Therapy in Frankfurt-on-Main, has been appointed to the charge of the sero-diagnostic department of the "Emil von Behring" Institute, under the supervision of Professor Uhlenhuth.

Messrs. Schall and Son (71, New Cavendish Street, W.1) have issued the seventeenth edition of their catalogue dealing mainly with *x*-ray apparatus. That part which relates to instruments for *x*-ray work, high frequency, diathermy, and so on, is well illustrated and complete; it contains, amongst other things, a note upon the working expenses of an *x*-ray installation, from which the approximate cost of each exposure for taking a plate or for giving a treatment can be ascertained. The first eighty pages gives a good elementary description of the various instruments used in radiology, and is an excellent introduction to *x*-ray work. Included is a separate slip dealing with *x* rays in gynaecology and in the treatment of malignant disease.

British Medical Journal.

SATURDAY, NOVEMBER 19TH, 1921.

HOSPITALS AND CLINICS.

To cut one's coat according to the cloth is no easy task, even to the skilled cutter who has the cutting in his sole control. It is a terrible business when two, three, or more cutters claim a share in the work and each is convinced of the overriding importance of his own part of the coat. Shall the claims of the sleeve override those of the skirt, or ——? But, difficulty notwithstanding, if the cutters were filled with a spirit of sweet reasonableness, the work might be accomplished to the satisfaction of all parties, including the wearer.

That is no fanciful sketch. It is being played out in real life to-day, and nowhere with greater sharpness than in the allotment of supplies to the medical services of the country. The Ministry of Health is compelled to reduce commitments just at a time when the claims made upon its resources are increasing. There have to be maintained those preventive services which do so much to make the abounding life of a civilized community possible; there are domiciliary and hospital services; there is a growing list of ancillary services which rank between these two, their scope being part preventive and part curative; and to these must now be added, by direction of Parliament, a certain measure of responsibility for the assistance of the great voluntary hospital system which is in truth the source and inspiration of all those other services. To divide his diminished resources between such important claimants will demand no mean measure of skill on the part of the Minister of Health, and we fear that, however skilful and just be his partition, he will gain only the hostility of his several beneficiaries, for each is (and by its very nature must be) convinced of the irreducible importance of its own sphere of action. The contribution of the Ministry to the finances of the strictly preventive medical services is small, and we may take it as certain that there will be and can be no change in this. The support of the "State" hospitals—fever hospitals and Poor Law infirmaries—is equally a matter of local government. But the finances of the numerous clinics for maternity and infant welfare, tuberculosis, and venereal disease, are very largely provided by the Ministry—in fact, it is the largest contributor; and the demands made on account of the support of these clinics are steadily increasing, so that what was in the initiation of these schemes a relatively small charge on the finances of the State is now a heavy one. The prospect of a reduction in these grants, either because of the need for economy or because of a necessity for sharing some of the available resources with other claimants, has already aroused considerable apprehension amongst the keenest supporters of the clinics.

In discussing this problem we may take it as agreed that no effort can be spared that will tend to the betterment of motherhood, for on healthy mothers we rely for healthy infants, and so for a succession of vigorous citizens who will serve the community; and so also can no effort be spared that will tend to stamp out those twin curses of civilization—tuberculosis and venereal diseases. It is only when we come to consider the details of the arrangements entered into for the furtherance of these ends that we find some disagreement between the enthusiasts, who can see no flaw in their widest schemes, and the practical, common-sense citizen who knows what he wants and wishes to get it with the smallest cost and overlapping of effort. When the working of these several clinics is examined from this latter standpoint it will appear that the ideals which were held in view in their establishment have been to some extent departed from, and that from this departure there has resulted some degree of failure, some overlapping of effort and waste, and some unnecessary increase of cost.

Education was the ideal in the establishment of the maternity and infant welfare clinics. The reformers said: "Let us teach the mothers how to be mothers, how to mother their infants; let us bring within the reach of the poorest of mothers the knowledge that no riches can measure." Now too many of these centres are converted into out-patient departments and relief stations, where the educational ideal takes second place (at least in the popular mind) to a material interest. The clinics for the treatment of venereal diseases were confessedly an emergency and temporary measure. In the fear of a vast increase in these diseases succeeding the war some special provision was considered to be an urgent necessity, the more especially since there had been a rapid development of new and complex methods of treatment which were unfamiliar to the past generation of students of medicine. The establishment of these clinics was justified on the ground that through such a measure alone could a knowledge and practical experience of these new methods be secured to existing private practitioners so that they might take up and carry forward the work of treatment initiated by the clinics. This great educational ideal has been obscured in many parts of the country. Clinics have been formed apart from voluntary hospitals where teaching is customary, and the private practitioner who gave part of his time to the work of the clinic has been displaced by the whole-time officer whose interest is bounded by the clinic. A similar criticism may be made of the tendency of the tuberculosis dispensary: it is merely an out-patient department with a very limited field of vision and inspiration.

These tendencies mean more than a sacrifice of the ideal with which these efforts were established. They mean an overlapping of effort, an attempt to do work for which other persons or other agencies are duly authorized and equipped. They arouse a suspicion of hostility between the overlapping agencies, so that the clinics tend to become isolated from the main stream of medical work, to their detriment. The spirit which engenders these lapses from the ideal is not a wholesome spirit. Partly it is the vulgar human instinct of acquisitiveness, a desire to expand the sphere of influence of one's office; but worse, it is a spirit of faithlessness, a lack of faith in the capacity of others. Hard times are often more conducive to the birth and vitality of high ideals than times of ease. It may be, therefore, that a restriction of the finances of some of these clinics will mean the revival of the primary ideals of their birth, to their greater success, and to the better health of the nation.

The position of the voluntary hospitals is full of anxiety. There are, perhaps, no institutions which have been so heavily hit by the changes brought about by the war. The volume of the work that falls to be done by them has not been lessened, but the same volume of work can only be done at a greatly increased cost, so that the former high level of support given to the hospitals is now wholly inadequate. Yet, at this critical time, many of the class from which came the bulk of benefactions are

no longer able to maintain this support, at least to the same extent, and the new generation of wealth holders has not yet learnt the duty and value of public benefaction. The report of Lord Cave's Committee fully established the claim of the hospitals for support. They did their work with efficiency and economy. And the report proved an especial claim on the State for help by reason of the indebtedness incurred for work done for sick and wounded sailors and soldiers during the war—a debt which for the London hospitals alone amounted to half a million pounds. In our issue of last week was given a statement regarding the position of the London hospitals and the decision to make immediate emergency grants to the hospitals whose realizable assets were so exhausted that they would without immediate assistance have no alternative but to close beds. The total grant made through the Ministry of Health for the aid of the hospitals of Great Britain is £500,000, and it is a condition of this grant that a corresponding amount must be raised by the hospitals themselves. The General Council of the King Edward VII Hospital Fund for London has entered a protest against this requirement that fresh money shall be raised pound for pound with the Government grants, on the ground that it will lead to great difficulties and possible injustice, and points out that the condition was not recommended by Lord Cave's Committee or enjoined by Parliament. The fact that emergency grants to the extent of £77,900 have had to be distributed between two dozen of the London hospitals in advance of any fulfilment, or possibility of fulfilment, of this condition argues the urgency of the needs of the hospitals.

The claims of the hospitals upon the benevolent are great. But they make a still wider claim upon all. These hospitals are the germinal areas of medicine in these islands. There is no one who himself, or whose kin, has suffered sickness, and whose necessity has been relieved by the ministrations of doctor or nurse, who is not in debt to the hospitals over and above the honourable discharge of personal dues. Each, doctor and nurse, has brought to him in his sickness the skill gained in the womb of the hospital, and he is in debt for this. To starve the voluntary hospitals will mean not only the closing of beds needed for the sick poor: it will mean a diminution in the activity and volume of the work which is the life force of private and public medicine, and from which comes that inspiration of preventive as of curative medicine without which clinic, dispensary, and sanatorium would languish and die. We do not believe that the day of the voluntary hospital is done. We recognize the difficulties of the time, but these are not insurmountable—certainly not to men of faith, who believe in voluntary effort, and whose belief is of that vitality which communicates itself to others.

ADDICTION TO DRUGS.

NOWADAYS so much is heard of the evil effects of the drug habit or addiction to drugs in other countries that Professor W. E. Dixon's address on the subject, printed at page 819, will be read with great interest. Without attempting any definition of the term "drug," he points out that human beings have always had the taste for drugs, whether stimulants, sedatives, or what not, and that to set all these substances down as purely harmful is no doubt to do an injustice to the unconscious physiological acumen of our ancestors and ourselves. Tea, coffee, tobacco, and alcohol are all of them drugs, and Professor Dixon enumerates some of the harmful effects they may work in the human organism; but, except in the case of alcohol, he excludes them from the list of true addiction drugs, of which, of course, morphine is the stock example. Striking a balance between their good effects and their injurious influences, he is clearly in favour of their use with temperance, though temperance is not the word he uses. All men are not made alike; to the poet tea may appear as "the cup that cheers but not inebriates," while in the charwoman it may produce such symptoms as the tremulousness, the fits of excitement and depression, and the anaemia with which so many medical men are familiar. In the case of alcohol Professor Dixon emphasizes the crop of new and more harmful drug addictions which seem apt to spring up in countries that try to enforce total abstinence by law. The chronic drunkard starts life handicapped by some imperfect development of his brain; nobody questions the evils produced by alcohol in the intemperate, but for the vast majority of civilized persons moderation in alcoholic beverages produces pleasure and, by so much, benefit; and it is argued that legislation is happiest when it works for the vast majority of those whom it is calculated to affect.

Turning to the true addiction drugs, opium with its derivatives and congeners of all sorts, Professor Dixon finds nothing good to say for their use in unqualified hands. He remarks that their devotees are the highly strung, over-sensitive, and nervous persons of their day, quick in perception, acute in sensibility, lacking in balance and in backbone, eager to escape from the realities of life. In narcotism, he says, they shut out contact with reality, and drift along knowing little of the reactions of mastery and defeat; they are shattered by the inhibition of their higher centres, and the very acuteness of their intellect is their undoing. Remembering De Quincey and possibly Coleridge, it may, perhaps, be necessary to admit that in a very few special instances persons possessed of such vivid sensations might benefit by a narcotic; but as a rule the morphinist, though not a mental defective, must be regarded as a menace to society—casual, careless, untrustworthy. It is argued by some that normal persons never become drug habitués, and that addiction to drugs may be taken as evidence of an existing psychopathy.

Opium, heroine, cocaine, and indian hemp, are described as the favourite narcotic drugs. There are, of course, degrees in the viciousness of the various forms of this addiction. Opium, for example, may be either eaten, smoked, or taken by subcutaneous injection. Professor Dixon points out once more that opium eating in strict moderation is now in India, as it was in our own fen country, a defensible practice, for it tends to ward off sickness and to lessen the discomfort of poor food and various diseases, such as malaria. The opium-eater is uncommon among Europeans. The habit of smoking opium as a form of self-indulgence is said to have had a distinct vogue in America until it was superseded by the infinitely worse habit of morphine injection. It is said, also, that before the war large quantities of morphine were sent yearly into China, often in proprietary packages, as a cure for the smoking habit, a cure that produces another and a worse vice. There is reason to believe that much of the recent increase in drug-addiction has been started in ignorance. Thus opium smoking was begun as a harmless pastime to be given up when desired, and indeed the vice is one that can often be cured with comparative ease because the amount of the alkaloid absorbed is in fact very small. Cocaine, too, employed as "white snuff," was regarded as a nerve

stimulant and pick-me-up, but it gives rise to a drug-addiction disastrous alike to mind and body. The prevalence of this vice is, we think, under-estimated by Professor Dixon. Certain reports from France, from Paris in particular, lead to the belief that the habit is fairly common among certain classes. Cocaine demoralizes much more rapidly and completely than morphine. It is taken solely for its intoxicating effect, and there is never the excuse that it relieves pain. But the actual withdrawal of the drug as a preliminary to the cure of the vice is easier in the cocaine habit, because the symptoms due to withdrawal are much less than in the case of morphine; there is far less misery and shock. The two drugs are, as Professor Dixon says, often taken by the same narcomaniac, and alcohol is often added; sometimes the same patient goes from one drug to the other, having a psychic craving for drugs of addiction. Heroine was used as a substitute for morphine, with the false idea that it was not a derivative of opium, and was even offered as a cure for morphinism.

In regard to the difficulty of curing the morphinist and the "drug-addict" generally, there are many reports showing the remarkable ingenuity and skill displayed by these patients in getting hold of their favourite drug and evading laws made to cut off all sources of its supply. The first part of the cure naturally consists in withdrawal of the drug, and here it is often a matter of the utmost difficulty to secure the co-operation of the patient, without which, of course, the "cure" is soon valueless. Thus, in the city of New York nearly 8,000 cases of drug addiction were recently collected during ten months; it was found that only 1,580 out of 2,800 of the patients were willing to accept treatment and withdrawal of the drug. Those treated were kept six weeks, and discharged in good physical condition "cured." In three months a considerable proportion had already relapsed, in spite of all efforts made to assist them.

Opinions differ as to the extent of narcotic drug-addiction in our own country, but it is generally accepted that in America these unfortunates are many and increasing in number; even before the war it was estimated that they numbered 175,000 in the United States. It would seem as though the cure for intemperance in narcotics, as for intemperance in alcohol, must lie in the development of character rather than in legislation. A way will always be found to get round coercive legislation; and the experience of other countries goes to show that as the difficulties of obtaining alcoholic beverages increase the consumption of noxious substitute drugs increases also. The way to sovereign power still lies through the mid-Victorian paths of self-reverence, self-knowledge, self-control; and true temperance must be based, as Professor Dixon says, on self-control, not on control by others. Perhaps if children were taught something more of the realities of the life into which they must presently enter, and were educated in self-discipline, they would be better able to combat the difficulties and temptations that must be faced in the world they will have to live in. To control conduct so that the individual has no liberty of choice is to court disaster.

RHODESIAN FOSSIL SKULL.

During the past week British anthropological dovecotes have been set in a flutter by the announcement of the discovery of a fossil human skull in Northern Rhodesia. The skull, we are glad to know, has found a permanent home in England, and is now safely lodged in the Natural History Department of the British Museum, South Kensington. Some time must elapse before the detailed results of a systematic examination can be published, but in the meantime it is possible to outline the bearing of the Rhodesian discovery on our knowledge of man's origin. There can be no doubt that the Rhodesian skull, which is in an excellent state of preservation, is of the Neanderthal type—the type which characterizes that ancient and extinct species of European now known as *Homo Neanderthalensis*. The differences between the European and newly discovered African form relate to detail; the divergence between them is not more than that which separates the cranial form of the negro from that of a modern European. The Rhodesian type is undoubtedly the more primitive, and presents a remarkable degree of resemblance to the famous Gibraltar skull in the Museum of the Royal College of Surgeons of England.

The discovery thus reveals no new type of humanity, but does give rather a startling revelation of the extension of an ancient type. Our knowledge of Neanderthal man has been of slow growth. The first discovery of the kind was made in Forbes's Quarry, Gibraltar, in 1848, the next in the Neanderthal Cave, near Düsseldorf, Germany, in 1857. Since then the remains of this peculiar species of humanity have been found in Belgium and France, but never in England or Italy. An important find was made at Krapina, Croatia, during the opening years of the present century. The teeth of the Neanderthal race, which are very peculiar, have been found in Jersey and lately in Malta. In every instance where it has been possible to fix the antiquity of Neanderthal remains, it has been found that they fall within a definite phase of the ice age. They are mid-pleistocene. The same strata in which such remains are found carry stone implements of a recognized kind of workmanship—the kind to which archaeologists give the name Mousterian. The Neanderthal species of mankind seems to have made his appearance in Europe quite abruptly, and, after dominating that continent for a long period, was totally replaced by European men of the modern type. Where he came from we have had no means of guessing hitherto. The finds at Gibraltar and Malta indicated a possible origin in Africa. The discovery at the Broken Hill Company's works in Northern Rhodesia shows that a primitive form of Neanderthal man lived in ancient Africa south of the equator; the discovery points to Africa as a possible cradle of Neanderthal man. Yet we have to remember that Southern Europe during the middle pleistocene phase was bleak, cold, and wet—not a likely home for a human product of tropical origin.

The discovery of ancient man in Southern Africa cannot be said to have been unexpected. Fifty years ago it was noted that stone implements of palaeolithic shapes, not unlike the kinds found in the gravels of Europe, occurred in many districts of South Africa. In a pleistocene formation, near Boskop, Transvaal, an ancient skull of a peculiar type was found just before the war broke out. It represents a peculiar variant of the modern type of skull, and, in spite of a great cranial capacity, is certainly negroid in its affinities. Thus it will be seen that Africa, particularly Africa south of the equator, bids fair to rival Europe as a mausoleum of ancient man.

We believe that the business to come before the General Medical Council at its autumn session, which begins next Tuesday, is unusually varied and important; it is probable that the session will last longer than has recently been customary.

THE DEFENCE OF EXPERIMENTAL MEDICINE.

WE publish elsewhere from the Research Defence Society an appeal addressed particularly to general practitioners of medicine. It is well known that efforts are made from year to year by the opponents of experimental medicine to introduce fresh legislation further hampering experimental work, and it is considered that the similar attempts which are to be anticipated in the future should be met by a more extensive campaign than has hitherto been possible. As is also well known, a general election is well within the bounds of possibility, and experience shows that during a general election candidates for Parliament are each approached by local antivivisectionists carefully coached by a number of societies. On the other side, the medical profession, and men of science generally, who are in complete agreement with it in regard to the imperative need of experiment, have been content to trust too much to the goodness of their cause. The nucleus of an organization for meeting the agitation of the antivivisectionists has existed in the Research Defence Society since 1908, and the profession is deeply indebted to that society, and especially to Viscount Knutsford (the chairman of its council), Mr. Stephen Paget (until lately honorary secretary and now vice-chairman), and to Sir David Ferrier (who has long been treasurer and is now associated in that office with Lady Horsley). It is desired to widen the basis of the society, and it is true that all but an insignificant proportion of medical men in this country realize how important it is that physiological and pathological research should be placed under no further legal restrictions. General practitioners, general surgeons and specialists, are not less convinced of the truth of this than are those members of the profession who are actively engaged in laboratory research; over and over again some local member of the medical profession has come forward to defend the cause when the antivivisectionists have instituted intensive propaganda in his neighbourhood. We have no doubt whatever that the objects of the Research Defence Society have the sympathy of the medical profession generally; the society now asks for the profession's active support, and we hope that the result of the present appeal will be that a large number will become members of the society, and that many of them will be able to induce members of their families and lay friends to assist the society, either by becoming members or associate members.

EVACUATION FROM MOBILE COLUMNS.

DR. A. H. MACKLIN, now surgeon to the *Quest* on its way to the Antarctic, has published an interesting account of how the sick and wounded were cared for in the mobile columns of the North Russia Expeditionary Force.[1] Written in the first instance as a thesis for the M.D. degree of the University of Manchester, it gives a new insight into the efforts of that gallant little army. Major Macklin (as he then was) had served as surgeon—and dog-driver and handy-man, as explorers must be—in the Shackleton Antarctic Expedition of 1914, and, on his return, after distinguished service in France and Italy, he became senior medical officer to the mobile columns of the North Russia Army. Ordinary equipment and methods of warfare were quite inadequate, and so "mobile columns" were formed to carry out operations against the enemy. These units were designed to go from a centre over trackless and snowbound regions, attack the enemy, and return. During the time each was absent it had to depend entirely upon its own resources, and had to carry all its own cover, food, and fodder for animals. In each unit there were some 260 men, trained in the use of skis and snow-shoes, their transport consisting of sledges drawn by horses, reindeer, dogs, or men, and they had to cover any distance up to 200 miles in a maximum time of fifteen days. To carry out his duties Major Macklin had to arrange for dealing with sick and wounded men 100 miles distant from the nearest source of surgical assistance, so that their chances of survival must have seemed very remote, for such extreme cold rapidly benumbs a devitalized man and makes him helpless. Each unit of the mobile columns had therefore to contain a large number of men trained in first aid, and had to be accompanied by a medical officer; the difficulties were multiplied when the columns split into numerous small parties. Operations in North Russia, it will be remembered, were directed to the defence of the ice-free ports on the Murman coast—at first against the Germans, who occupied Finland, and, later, against the Bolshevists in the south. The military and strategical value of sending out these small detachments so far from their bases to give sporadic pinpricks to an enemy of indefinite strength was perhaps more evident to the high command on the spot than it is to us to-day. Be that as it may, the mobile columns carried out their instructions in the most gallant fashion, and their medical arrangements, which were well thought out, proved adequate. Major Macklin's previous Polar experience was naturally of the greatest value; he was accustomed to the climate, to the equipment, and to the method of transport. He had himself driven dog transport in the Antarctic regions, and he was familiar with the measures necessary for protection against the climate. He found that while reindeer were the best type of transport in barren regions, the area in which they could be used was limited to that in which reindeer moss grew; ponies were the most suitable in the populated areas, but dogs could be used under all conditions and when ponies and reindeer were useless. Men, though the most reliable for haulage purposes, were yet the slowest and most extravagant in food. As large and complete an equipment as possible was desirable; but, on the other hand, it had to be rigidly limited to a weight and bulk which could be safely transported. The system of evacuation followed, as far as possible, the usual military procedure by which the regimental medical officer accompanying the unit was responsible for the evacuation of the wounded to his aid post; from this point the responsibility devolved upon the officer commanding a field ambulance, whose duty it was to collect wounded from the aid post and evacuate them to a dressing station. Thus, when a man was wounded he was attended on the spot by the regimental stretcher-bearers, evacuated to an aid post, where he was attended by a medical officer, examined, re-dressed, and prepared for the long sledge journey to the advanced dressing station, passing a series of medical and transport relay posts. The advanced dressing station was so situated as to lessen the distance of the sledge journey as far as possible, but was placed at a point where it could receive adequate medical and general supplies. The medical equipment carried in the mobile columns had to be light, and consisted only of those things which were absolutely necessary; this equipment was carefully selected by Major Macklin, who gives full details. His knowledge of Polar climates had taught him that frost-bite was very liable to occur even in healthy men living under the conditions met with by the mobile columns, and his notes on this subject are of special value; he considers that brisk dry rubbing without oil produces better results than massage with oil, and that steps ought, in fact, to be taken to prevent the access of grease or oil to the skin or clothing.

[1] *The Evacuation of Sick and Wounded from Mobile Columns.* By A. H. Macklin, O.B.E., M.C., M.D.Vict., late Major R.A.M.C. Manchester: The City Press Co., Ltd., Oxford Road.

THE PATH OF INFECTION IN PNEUMOCOCCIC INVASION OF THE LUNGS IN MAN.

SINCE the publication in 1897 of the late Dr. Samuel Gee's aphorism, "Pneumonia is not a local but a universal disease; and the brunt of it may fall upon any part—lungs, endocardium, membranes of the brain, intestines, kidneys," the path of infection in pneumonia, whether by the blood vessels or the air passages, has been the subject of

controversy. In the Lumleian lecture for 1912, "On some moot points in the pathology and clinical history of pneumonia," Dr. Percy Kidd, relying mainly on the early occurrence of septicaemia before the appearance of local signs, summed up in favour of the haemic route. Recently, in a paper giving the results of a histological and experimental research, Drs. R. R. Armstrong and J. F. Gaskell[1] classify the pneumococcic infections of the human lung as follows: (1) Air-borne, (*a*) lobar pneumonia, (*b*) bronchopneumonia; (2) blood-borne, miliary pneumonia; and (3) lymph-borne infection, relapsing pneumonia. In lobar pneumonia the infection is seen to be first localized in the bronchioles, all of which in the area of inflamed lung are affected; their epithelium rapidly becomes completely desquamated, and the infection then spreads into the alveoli, reaching last those furthest from the bronchioles. As compared with this histological evidence, the occurrence of positive blood cultures is not regarded as an argument of weight in deciding the path of infection, for experiment shows that infection of the extremely vascular lung easily leaks into the general circulation, especially in the early stages before the establishment of local protective reactions. The generally accepted opinion that lobar and bronchopneumonia are essentially the same process is confirmed and extended; in both the pneumococcus reaches the lungs by the air passages and settles in the terminal bronchioles; the factors determining whether the reaction is lobar or bronchopneumonic are the virulence of the organism and the resistance of the host; for children and old persons react to less virulent infections than adults, in whom greater vigour of the respiratory movements may play a mechanical part by materially assisting in the rapidity of infection of the alveoli, and so in rendering lobar pneumonia the prevailing form in adult life. There is an interesting suggestion as to the mechanism of the crisis in lobar pneumonia; the invading pneumococci are practically destroyed by the fifth day of the disease, and then the liberation of endotoxin, which is responsible for the general symptoms, comes to an end, and as soon as this endotoxin is neutralized, a process apparently occupying about forty-eight hours, the crisis follows, usually on the seventh day. Miliary pneumonia, due to infection of the alveoli by pneumococci reaching the lungs by the blood stream, is described and shown in a figure; this blood-borne infection spreads from the capillaries directly into the air vesicles, and the bronchioles either escape or are affected only by secondary extension. An absence of polymorphonuclear exudate is characteristic of this lesion, which is widely spread through the lungs, is merely part of a general septicaemia, runs a very rapid course, and is almost confined to young children; it is analogous to generalized miliary tuberculosis, and it is suggested that the pulmonary changes in pneumonic plague are also of this nature. The third method by which pneumococcic infection is spread in the lung is by way of the lymphatics, either from existing areas of infected lung or from the bronchi; this process, analogous to the spread of chronic pulmonary tuberculosis, is slow, and accounts for some cases of chronic and relapsing pneumonia.

SCARLET FEVER AND MILK.

Dr. A. J. Douglas, the medical officer of health for Winnipeg, describes in his annual report an outbreak of scarlet fever which occurred in April, 1920, following a dance held at a certain hotel in that city. From April 17th, a week after the dance, when the first case was notified, until April 26th, fifty cases, including three members of the hotel staff, were reported among those who had attended this dance. Three weeks before the outbreak two guests had been removed from the hotel suffering from scarlet fever, but no connexion could be traced between these two cases and the subsequent outbreak. Examination of the hotel staff, especially those who were concerned in the handling of food, yielded a negative result. The only possible source of infection in the hotel, according to Dr. Douglas, appeared to be the milk supply, which was not pasteurized, or an ice-cream made from cream also unpasteurized. There were, however, no other cases of scarlet fever among the dairyman's customers, and none at the dairy itself. In these circumstances Dr. Douglas suggests that the milk was infected within the hotel either by someone suffering from or recovering from an unrecognized attack of scarlet fever or by a carrier with no symptoms of the disease. The explosive character of the outbreak at its onset is certainly suggestive of an infection due to milk, but, like many of the scarlet fever epidemics attributed to this cause, of which 15 examples were collected by the late Mr. Ernest Hart and 59 by Bosey and Kober, making a total of 74, the evidence cannot be said to be conclusive. In some epidemics of this kind, and notably in the classical Hendon outbreak in 1885, the spread of scarlet fever has been attributed to an eruptive disease of the udders of the cows. In the Winnipeg outbreak no information is given as to the condition of the cows, but expert veterinary opinion, as Ker points out, is against the view that cows are subject to scarlet fever, and it seems safe to accept Savage's view that they are at most the carriers of the human infection. Other sources of milk contamination in the Winnipeg outbreak, such as the milker's hands, the milk pail, and the water supply of the dairy, are not discussed, nor is it stated how many of the 50 cases had partaken of the ice cream. The possibility of some of the dancers suffering from a *forme fruste* of the disease should also be considered. In conclusion, therefore, we may repeat that the evidence of this outbreak being due to milk is not conclusive, though the history of the onset is suggestive of such a cause.

SIR PHILIP MAGNUS.

Sir Philip Magnus has announced his intention of not seeking re-election as a Parliamentary representative of the University of London at the next general election, on the ground that he has just entered his 80th year, but adds that he sees no reason to expect a dissolution before December, 1922, possibly not before December, 1923. Sir Philip Magnus was first elected to represent the university at the general election in January, 1906—nearly sixteen years ago. In a letter announcing that he will not seek re-election he says that the member for the university has to safeguard its interests, which differ in some not unimportant features from those of other British universities. The member, Sir Philip Magnus continues, "has to attend very closely to the separate requirements of the different classes of professional men and women who constitute so large a majority of the members of his unique constituency, and many of whom are permanently engaged in the all-important task of maintaining the physical health and of developing the intellectual capacity of our future citizens. It is highly desirable, therefore, if I may venture to offer a suggestion, that in the selection of a candidate to represent our university in Parliament regard should be had, not only to his views on questions of general party policy, but also to his wide educational experience and to his detailed acquaintance with the requirements of members of the medical and teaching professions, as affecting the special interests of those professions and the service they are called upon to render to the State." Sir Philip Magnus himself has afforded a shining example of the qualities he describes as necessary to a university member. On many occasions he has given his cordial assistance to the British Medical Association in parliamentary matters, and gratitude is in particular due to him for his share in the long fight for

[1] R. R. Arms rong and J. F. Gaskell, *Journ. Path. and Bacteriol.*, Edin., 1921, xxiv. 369-395. The material embodied in this paper was selected and re-examined, and the paper was written while one of the authors was work ng under the Medical Research Council and the other held the Ernest Hart Memorial Scholarship of the British Medical Association.

securing tenure for medical officers of health, which was brought to a successful conclusion last year. In recognition of these services he was, at the Annual Meeting in 1920, elected an honorary member of the British Medical Association.

MEDICAL WOMEN'S FEDERATION.

The Council of the Medical Women's Federation held its autumn session in Edinburgh on November 11th and 12th, meeting in the beautiful library of the Royal College of Physicians. It sat for two days, and twenty-two members, representing the ten different associations of the federation in Great Britain, were present. A long discussion took place on the serious situation raised owing to the recent dismissal by the Glasgow Corporation of three married medical women who for some years had been employed in its child welfare and tuberculosis departments. When appointed they were already married; now they are dismissed at the instance, it was reported, of the Labour members of the corporation, who object to the employment of any woman whose husband is earning a regular income. The case of Dr. Miall-Smith, recently dismissed by the St. Pancras Borough Council on account of her marriage since appointment, also came under consideration. Nothing precluding marriage was contained in the terms of her contract. It was felt strongly by the council that it was not the function of the State or of any public authority to inquire into the private and economic affairs of men or women who apply for medical appointments. Persons should be allowed to hold office because of their individual capability to perform the assigned duties. If such inquiries were uniformly pressed it would mean the exclusion from public service of many men who, by inheritance or marriage, have sufficient money to maintain a small home. A resolution was unanimously carried recording the opinion of the council of the Medical Women's Federation that "marriage should be no bar to the holding of posts by medical women," and that "their exclusion is entirely contrary to the spirit of the Sex Disqualification (Removal) Act, 1919, and against public policy." The need for maintaining the standard so steadily advocated by the British Medical Association, of equal pay for equal work in the case of medical men and women, was once more emphasized by the council, in view of the danger of women being invited by public health authorities to accept a lower salary than is deemed essential for men. The council of the Medical Women's Federation is fully alive to the detriment to the profession as a whole which would occur if this principle were infringed, and is doing everything in its power to discountenance any form of "underselling" on the part of medical women. Amongst other subjects raised at the meeting, that of birth control stood prominent. A subcommittee was appointed to study the subject from all points of view, in order to ascertain the ultimate effects of birth control upon imperial health and welfare. The council of the federation also expressed the opinion that the services of medical women are desirable in large mental hospitals in the interest of the women. This is already recognized by many able superintendents. The introduction of psychotherapy as part of mental treatment was given as a strong reason for adding suitable medical women to the staffs of all large mental hospitals and asylums.

FACIAL SURGERY WITHOUT SURGEONS.

We have received an exceedingly interesting publication, entitled *Report on Work, 1917–1921*, of the Queen's Hospital, Sidcup, for sailors and soldiers suffering from facial and jaw injuries. It is famous throughout the world for the great success it has obtained in the treatment of facial mutilations, perhaps the most tragic and ghastly of war wounds. The report, which includes some striking illustrations of plastic surgery of the face, gives an account of the last four years' working of the hospital, and states that the end of its labours is now happily in sight. The admiration which we had for the Queen's Hospital has, since reading this report, been greatly intensified, for it would appear, at least according to the internal evidence of this report, that the committee has achieved its thousands of brilliant results without the aid of any surgeons or dentists, except one honorary consulting surgeon and the presidents, Sir Alfred Keogh and two late Directors-General of the Naval Medical Department, whose part was presumably not active. It does mention, it is true, that at one time some overseas medical officers were at the hospital—"separate units for Canadians, Australians, and New Zealanders with their medical officers and staff were accommodated"—and also that "some four teams of American surgeons and dentists were attached for training in the special work," but otherwise the entire work of the hospital was apparently carried on by the vice-presidents, general committee, commandant, matron, honorary secretary and treasurer, accountant, and auditor. The point is not that no names of surgeons are mentioned, for that might have been an oversight, but that absolutely no mention is made of the existence of any active surgical staff. A leaflet was enclosed in the report, printed in red ink, to which we turned eagerly as perhaps giving some explanation of this unusual method of staffing a hospital, but it merely expressed the regret of the honorary treasurer that, owing to an accidental omission, no mention had been made in the report of the Committee of the National Relief Fund. So the mystery—or the triumph—remains.

We regret to hear of the death, on November 14th, of Dr. Sheridan Delépine, Professor of Public Health and Bacteriology in the University of Manchester, and Director of the Public Health Laboratory. We hope to publish a notice of his career in an early issue.

Medical Notes in Parliament.

[From our Parliamentary Correspondent.]

The Prorogation.

Parliament was prorogued on November 10th until January 30th. It is understood, however, that the date for the new session may, of course, be brought forward or put backward according to circumstances. There is also a distinct possibility that in the interval a general election may occur if the Cabinet be unable to carry through the Irish negotiations with the Ulster leaders and with the representatives of Sinn Fein.

The whole of the time of the autumn sitting of Parliament was occupied with Government business. The five measures which principally engaged attention were: The Trades Facilities Bill, to provide capital for public undertakings and to assist export trade; the bill to enable local authorities to afford more work for the unemployed; the Unemployed Workers' Dependants' Temporary Provision Bill; the bill to preserve insurance benefits for the unemployed, but on a reduced scale, as was explained last week; and the Equalization of Rates Bill, applying to London only, the purpose of which is that the poorer parishes may be enabled to draw to a limited extent from the richer for the relief of their burdens.

In regard to finance, the Chancellor, Sir Robert Horne, gave a gloomy picture of the prospects for next year's Budget. The estimated surplus and the sum that was to have been allocated for the payment of Sinking Fund will, he now reckons, both have disappeared, but with extreme care an actual deficit may be avoided. Even to secure this result Ministers have found it necessary to announce drastic economies in all departments, and it is stated that Sir Eric Geddes's Committee in its report will recommend big reductions of expenditure wherever possible. The outlook for the Ministry of Health, however, appears to be practically defined already by the needs of the nation; and fresh cuts there can hardly be contemplated. In view of the situation the insurance practitioners agreed, as was reported a few weeks ago, to a reduction in their capitation fee from 11s. to 9s. 6d., and numerous health activities are being conducted on a very restricted basis. A small silver lining to the cloud is afforded by indications here and there of some revival in trade, and by the proposals at the Washington Conference to stop the construction of

capital ships. Thus the revenue position may be improved, but there has to be borne in mind that income tax in respect of commercial undertakings is being paid on a three years' average, and that a large drop in returns has accordingly to be anticipated for the year after next.

Voluntary Hospital Grants.

Mr. A. Lyle asked the Minister of Health, on November 9th, whether, under the terms of his Departmental Paper No. 1,402, giving the terms of appointment of the Voluntary Hospital Commission, the announcement that after the first emergency grant further grants would be made only against fresh money raised by the hospitals meant that they could not reckon, for the purposes of obtaining assistance, any ordinary revenue which they might receive in the current years; and whether, since this condition would prejudicially affect the poorer hospitals, which had practically tapped all sources of income, and which now saw, at all events for the present, no further new sources of revenue in sight, he would, in the interests of these poorer hospitals, investigate the operation of this condition. Sir Alfred Mond replied that the amount by which the income of a hospital for 1921 exceeded the income for 1920 would be reckoned as new money for the purpose of calculating the grant. In cases where the hospitals of a given area agreed to combine for this purpose their aggregate income could be made the basis for calculating new money. In regard to the second part of the question, he understood that King Edward's Fund was proposing to confer with the London hospitals as to the best method of raising their share of the anticipated deficit on the year's working.

Mr. Lyle asked how much of the money would be distributed this year. Was the Minister aware that this grant was made to meet an immediate necessity; and could he say that it would not be spread over, at any rate, two years? Sir A. Mond said he should want notice of the first part of the question. The money would be allocated as soon as practicable, and, he hoped, very shortly. Rear Admiral Sir R. Hall inquired whether Charing Cross Hospital was entirely self-supporting by good administration. Sir A. Mond said he could not give an answer to that, but he hoped it was so.

Mental Treatment of Ex-Service Men.

During the present month a number of questions have been asked in the House of Commons regarding the treatment and care of ex-service men suffering from mental disorder.

Captain Loseby asked, on November 3rd, the maximum amount paid as treatment allowances to an ex-service man confined in a lunatic asylum, and if the same allowance was payable in respect of a patient certified insane undergoing curative treatment in an institution approved by the Board of Control. He further inquired if more than 6,000 ex-service men were in lunatic asylums and if treatment allowances were paid by the Ministry of Pensions for persons so detained, but refused in certain instances to persons who were unwilling to suffer such detention, but asked, in the alternative, to be received by known institutions approved by the Board of Control, though not lunatic asylums in the ordinary sense. Captain Loseby also asked if the Minister was aware that an institution known as Chartfield, supported by voluntary subscriptions, had by intensive medical treatment achieved remarkable results in the cases of ex-service men temporarily insane through the war; and whether treatment allowances were being refused to patients anxious to enter this institution and were in certain cases being granted only on the condition that the patient suffered detention in a lunatic asylum.

Mr. Macpherson agreed as to the number of ex-service men in asylums. Men suffering from certifiable insanity due to war service were eligible for treatment and allowances at the expense of the Ministry in any institution approved by the Board of Control which, in the opinion of the Ministry's medical advisers, afforded the most appropriate treatment. Treatment allowances for these patients were substantially on the same basis as in other cases of in-patient treatment, and did not vary with the institution. Captain Loseby appeared to confuse treatment allowances with the cost of treatment. All the officers whose condition was due to service, at present in Chartfield, were, according to his information, receiving maximum retired pay; but the Ministry refused to accept responsibility for the charges for their medical treatment. He welcomed the deputation which Captain Loseby recently brought to him to consider what improvements were possible in treatment, and he arranged to have Chartfield inspected and to consider its possibilities. The report has not yet been submitted, but he had consulted with the Board of Control, who now said they were unable to recommend the Ministry to place this home on the approved list for the reception of patients generally. This was in accordance with the general policy of the Ministry—which had been and remained—to separate persons suffering from certifiable insanity from other patients. Captain Loseby put it that the Ministry had not been asked either in regard to Chartfield or any other institution to utilize the place generally, but only for the sane patients, and he asked whether the Minister adopted the position that if a man were insane he must go to a licensed lunatic asylum and to no other place. If that were not so, what test did he apply in regard to approving the particular position?

Mr. Macpherson replied that he was bound by law to send a certified patient to an asylum or some other place approved by the Board of Control. The places he utilized for this unfortunate class of men were very well run indeed. He did not ask for any charity. It was an obligation of the State to attend to this work. Mr. Macpherson added that he had no personal knowledge of the success or otherwise of Chartfield. A report was now being submitted. He should consider the individual merits of the place. It was, of course, his duty to see that the various institutions under the department were good and were carrying on successful work. He refused to send ex-service men to a charity institution.

Sir Watson Cheyne asked whether it was not a fact the general asylums were fully aware of the hope and possibility of treatment, and put that as their first object in receiving patients. Captain Loseby said he could not follow what kind of hardship was held to be inflicted upon the insane by compelling them to mix with the sane. Mr. Macpherson said it was difficult to discuss the question of policy by means of question and answer, but he refused to mix insane patients with neurasthenics.

Asked by Captain Loseby, on November 8th, the number of lunatic asylums approved by the Ministry of Pensions for ex-service men and the number of these which were run for private gain, Mr. Macpherson said that approximately 240 institutions were under the control of or had been approved by the Board of Control and the Ministry, and of these more than sixty were private establishments.

On the following day Captain Loseby asked the Prime Minister if the treatment allowances upon which some six thousand ex-service men depend, were paid strictly upon the condition that these men consented to be confined in lunatic asylums, whereas the allowance was refused in respect of patients being treated and anxious to be treated in certain private institutions of the Board of Control; also whether the official figures showed that on January 1st, 1919, there were 2,507 ex-soldiers confined in lunatic asylums; that the figures had risen to 4,673 on January 1st, 1921, and to 6,.35 on October 27th, 1921. He asked, further, if the Prime Minister was aware that bitter laments were continually emerging from the men so confined, and whether he would consider the advisability of setting up a Commission of members of the Houses of Parliament to hear complaints and consider whether conditions could be improved.

Mr. Macpherson, who replied, said that the lunacy law required that every person who was certified as insane should be sent to an institution approved by the Board of Control, save that under certain conditions a single patient might be placed in a private house not specifically licensed for the reception of lunatics. Treatment allowances were granted, and the necessary cost of treatment was defrayed by the Pensions Department in respect of all certified patients whose insanity was due to war service and who were receiving treatment in institutions, whether public or private, approved by the Board of Control and by the Ministry. He could not speak for the ex-service men in asylums the origin of whose state did not entitle them to Royal Warrant benefits, but as regards certified "service patients" it was not accurate to suggest that any large number of complaints were received as to the conditions of their treatment. On the contrary the number was small, and they had invariably proved to have been made on unsubstantial grounds or to be of minor importance. When a complaint was received the practice was for the institution to be inspected and the whole circumstances investigated by Pensions Ministry officers, either alone or jointly with Commissioners of the Board of Control. Under an arrangement with the Board of Control, asylums were now visited by medical officers of the Pensions Ministry, and the service patients personally interviewed. Thus he was kept in close touch with the conditions of asylums, and he did not consider that there was any ground for adopting the suggestion to set up a commission. He could not accept as accurate Captain Loseby's statement as to the number of certified ex-soldiers in asylums in January, 1919, and January, 1920. On the latter date the number was approximately 6,000.

Captain Loseby inquired whether, if he could produce tangible evidence that some lunatic asylums were highly unsuited for ex-service men and made out a prima facie case, the Minister would advise the setting up of a commission. Mr. Macpherson did not think he could do so, but said he would be glad if any member of that House would visit any institution under his control. He had taken the greatest personal interest in this particular branch of work, and the complaints he had received had always been on unsubstantial grounds. Mr. Gritten asked whether it would not cause a large drain on financial resources to place large numbers of patients in private institutions. Mr. Macpheson said that was so; the State, in his opinion, was behaving very generously, but he had consistently refused to mix patients who had been certified with those who had not. In answer to Sir Philip Magnus, Mr. Macpherson added that the private institutions approved by the Board of Control, like the asylums, were periodically visited by the department. In reply to Mr. Gillis, he said that

provision had been made in the Ministry's neurasthenic hospitals for the accommodation and treatment by trained medical officers of uncertifiable cases suffering from war injury.

On further questions by Captain Loseby, on November 10th, Mr. Macpherson stated that the number of ex-service men at present receiving treatment in county or borough asylums at the cost of the Ministry was approximately 6,210, and of these some 4,140 had dependants eligible for and in receipt of treatment allowances. Captain Loseby inquired whether the number of men in lunatic asylums since January this year had increased by some 35 per cent. Mr. Macpherson believed that that was not so.

Scarlet Fever and Diphtheria in London.—In reply to Mr. Gilbert, on November 9th, Sir A. Mond said that he had appointed a special Office Committee, with medical representation, of the London County Council and the Metropolitan Asylums Board to investigate the increase in scarlet fever and diphtheria in London. There were at present 6,192 cases of scarlet fever and 2,996 cases of diphtheria under treatment in the hospitals of the Metropolitan Asylums Board. The Board's accommodation was limited to approximately 9,500 beds, but it was hoped that the arrangements which had now been made would meet the needs of the situation.

Medical Research Institute, Hampstead.—Mr. F. Green asked, on November 9th, whether the Home Secretary had received a letter, signed by twenty-five persons living in the neighbourhood of the Mount Vernon Central Institute for Medical Research, complaining of the cries and shrieks of a dog between October 10th and 16th. Mr. Shortt said he was informed that on the first two days of the period covered by the question there was no dog on the premises; that one dog came on October 12th and another, which was noisy at first on the 13th, but that these had not been operated upon; that they had been inoculated with a drug but without effect, and were still in perfect health. The dogs were seen by the Home Office Inspector on October 14th and were found by him quiet and, apparently, normal.

Institutional Treatment of Tuberculous Patients.—Dr. McDonald asked, on November 9th, if steps could be taken to relax the order that tuberculous ex-service men must be treated within the area of their residence, especially when greater benefits could be offered outside such area and voluntary means were available for the maintenance of the patient. Sir A. Mond replied that so far as he was aware no such order had been issued. The institutional treatment of tuberculous ex-service men was undertaken by the county and county borough councils, and it was within the discretion of a council, acting on the advice of their tuberculosis officer, to decide in what institution any particular case should be treated, provided that the institution and the arrangements made by the council for the use of the particular institution had been approved by the Minister of Health.

Ex-Service Men and Tuberculosis.—Major Tryon, on November 1st informed Mr. Sitch that during the past eighteen months 6,500 pension awards had been made to ex-service men in respect of tuberculosis; but as rejections were not classified according to diseases, he could not state the number of claims in respect of tuberculosis which were not accepted during that period.

Mental Deficiency Acts: Expenditure.—Mr. Leslie Scott, referring on November 9th to the circular issued by the Board of Control to local authorities calling upon them to limit their expenditure next year under the Mental Deficiency Act to the total amount sanctioned for this year, asked if the Minister of Health was aware that even if no cases, except those classed as urgent by the Board of Control, were dealt with, the result of the limitation would be to leave some 2,000 urgent cases uncared for, to their own unhappiness and suffering, to the great harm of many others, and at a cost to the community in rates and taxes for police, criminal justice, and Poor Law many times as great as the cost of looking after them under the Act of 1913. Sir A. Mond said he had seen the circular. Local authorities were at present able to deal with urgent cases as defined by the Board of Control provided that the expenditure fell within the limits of their approved estimate for 1921–22. The question of the limitation of expenditure under the Mental Deficiency Acts necessitated by the Government decision for drastic reduction of expenditure was receiving careful consideration.

Typhoid Fever.—In answer to Mr. Hirst, on November 10th, Sir A. Mond said he had been aware of the outbreak of typhoid fever in the village of Bolton-on-Dearne since August, when it began. It was attributed to an infected water supply, which was being dealt with.

Prison Hospital Appointments.—Sir S. Hoare asked the Home Secretary, on November 10th, whether the lady members of the Voluntary Advisory Board would in future be consulted before appointments to the hospital staff, disciplinary or nursing, were made. Mr. Shortt said that the Prison Commissioners had already arranged to do this in respect of a hospital at Holloway, and were very glad to have the Nursing Board's assistance.

St. Andrew's Mental Hospital, Northampton.—Sir Alfred Mond, in reply to Mr. Myers on Nov. 8th, said that this hospital was visited and thoroughly inspected by two commissioners on May 16th and 17th last, who reported that the institution continued to be very well maintained, and that all the patients were seen and were found to be properly and kindly cared for.

England and Wales.

Newcastle Royal Infirmary War Memorial.

A memorial tablet, erected in the chapel of the Royal Victoria Infirmary, Newcastle-upon-Tyne, to the memory of the twenty members of the staff who fell in the war, was unveiled on November 10th by Professor David Drummond, Vice-Chancellor of the University of Durham and President of the British Medical Association. Dr. Drummond said that of those whom the tablet commemorated eleven were medical practitioners, seven medical students, and two hospital porters; each one of them had been a staunch friend of the institution. The tablet was dedicated by the Bishop of Durham (Dr. Hensley Henson).

The British Orthopaedic Association.

The annual meeting of the British Orthopaedic Association will be opened at the house of the Liverpool Medical Institution on the morning of Friday, December 2nd. The President, Sir Robert Jones, K.B.E., C.B., will be in the chair, and a discussion on the late results of the treatment of congenital dislocation of the hip will be opened by Mr. H. A. T. Fairbank and continued by Mr. E. Laming Evans; afterwards a demonstration of radiograms of bone and joint affections will be given by Mr. C. Thurstan Holland. In the afternoon Mr. T. R. W. Armour will give a demonstration of operations and cases at the Royal Southern Hospital, and the members will dine together in the evening. At the morning session on the following day, Saturday, December 3rd, Mr. Harry Platt will read a short paper on a series of endosteal tumours, Mr. R. C. Elmslie will give a demonstration of such tumours, and Mr. D. McCrae Aitken will read a paper on "Function in relation to repair in bone." In the afternoon visits will be paid to the Royal Liverpool Country Hospital for Children at Heswall and to the Hospital for Children, Leasowe, Cheshire.

King Edward's Hospital Fund for London.

A special meeting of the General Council of King Edward's Hospital Fund for London was held at St. James's Palace on November 9th, with the Earl of Donoughmore in the chair.

The Honorary Secretary, Lord Somerleyton, read the order of appointment, signed by the Prince of Wales, President of the Fund, delegating his powers as President, during his absence abroad, to a Committee consisting of Lord Donoughmore, Lord Finlay, and the Governor of the Bank of England; and a letter from His Royal Highness was read by the Chairman.

The Chairman of the King's Fund Policy Committee (Lord Stuart of Wortley), in presenting a report of that committee on the reorganization of the King's Fund, said that the post-war crisis in hospital finance had added much to the work of this Fund. The old work had increased in quantity, and work of new kinds had been added. Hence the reorganization proposals that were before them that day. They involved no change in the Fund's Act of Incorporation, and therefore no application to Parliament. The old work would have increased in quantity in any case; the money difficulties and anxieties of the hospitals would have had that effect even if there had been no Cave report. But, arising out of that report, much work of a new kind had been added to the old; its urgency had been increased, and the time available for doing it made less, by the interpretation put by the Government on the Cave proposals. The work of the committees needed to be better concentrated and their responsibility more accurately ascertained. The new framework proposed was submitted as a businesslike apportionment of the field to be surveyed. He moved that the general principles of the scheme be approved, and the Policy Committee be authorized to work out the details.

The resolution was seconded by Sir Cooper Perry. Sir William Collins suggested that the Policy Committee should present a further report on the steps to be recommended for the preservation of the voluntary system of hospital management. Lord Stuart, in reply, said that the measures for the preservation of the voluntary system

were being worked out in consultation with the hospitals, and no final report was possible. The resolution approving the scheme was carried unanimously.

The Chairman of the Executive Committee (Lord Stuart) presented a report of that committee on the conditions attached to Government grants to voluntary hospitals, recommending that the Council should pass the following resolutions:

(i) That the President and General Council of King Edward's Hospital Fund for London have considered the conditions attached by the Treasury to the temporary assistance voted by Parliament to voluntary hospitals requiring that fresh money shall be raised pound for pound with the Government grants, and are of opinion that the application of this condition, which was not recommended in the report of Lord Cave's Committee, nor separately considered (much less expressly enjoined) by Parliament, will lead to great difficulties and probably to great injustices as between different hospitals in the distribution of the grants; and they trust, therefore, that the condition will not be pressed.

(ii) That copies of this resolution should be forwarded to the Prime Minister, the Chancellor of the Exchequer, and the Minister of Health, and the Voluntary Hospitals Commission.

The resolutions were carried.

New X-Ray Equipment at Bradford.

On November 4th a new deep therapy *x*-ray apparatus, which has been installed at the Royal Infirmary, Bradford, was formally dedicated to public use by the Lord Mayor. The apparatus, the cost of which was £1,000, is the gift of Mrs. W. H. Shaw, of Bradford, and was largely the result of an appeal made in the local press by Mr. G. E. Priestman, chairman of the board of management. In the course of the opening ceremony Mr. Priestman mentioned the desirability of obtaining a supplementary apparatus for treating cases of malignant disease of the throat and nose, and later in the afternoon Alderman Thomas Sowden offered a donation of £150 from himself and Mrs. Sowden for the purchase of this apparatus, which was gratefully accepted. Dr. W. Mitchell, who has been in charge of the electrical department of the Bradford Royal Infirmary for some fifteen years, said he was certain that the right thing had been done in the purchase of the new apparatus, which would enable them to keep abreast of the times. The rays produced by the apparatus were of great penetrating power, and, in his opinion, radium had been a failure to a large extent because of the small quantity of high velocity rays emanated. There was a consensus of opinion that surgery should be the first resort in most cases, but there was hope that a number would be cured by *x*-rays which could not be cured by surgery, though he did not presume to say that it would cure every case.

Armistice Day at University College, London.

Armistice Day was celebrated at University College, London, by the dedication of two memorial tablets, one in University College Hospital Medical School and the other in the Slade School of Art. The tablets commemorate the students who fell in the war, both old students and students who left the college directly for the field, and they are part of a larger scheme of memorial in which it is hoped eventually to record in enduring stone the name of every student from the college who gave his life for his country. Both tablets are beautifully wrought, with the lettering on a white marble panel bordered with variegated grey marble, and the figures of the fateful years 1914–19 picked out in gold. Among the inspiring names on the tablet in the medical school is that of Victor Alexander Haden Horsley—one name among four-and-thirty others, as its bearer would have wished it to be, without any indication of special rank or distinction. The roll of honour at University College, including all departments, contains three hundred names, and the reading of it, partly by the Provost, Sir Gregory Foster, and partly by the Dean of the Medical School, Dr. G. F. Blacker, in the presence of the staff and students and the nurses from the hospital, gathered in the main quadrangle, occupied a solemn quarter of an hour. At the close the Last Post was sounded, and then came the silent two minutes of remembrance and rededication, which were followed by the Reveille and the hoisting of the college flag to full mast. Previously the President of the University College Hospital Society and the Presidents of the College Unions had placed wreaths at the spot where these names are at present temporarily inscribed. The tablets were formally presented on behalf of the War Memorial Committee by the Provost. The Dean, in accepting the tablet for the Medical School, said that in its position just within the vestibule in University Street it would recall, even to the most thoughtless who passed in and out, the noble ideals which had thrilled the young lives in those recent days of ardour and renunciation. The blood of these gallant men was not shed in vain, and within these quiet walls of study and preparation their spirit would remain for evermore.

Ireland.

Ulster Medical Society.

President's Address.

The opening meeting of the Ulster Medical Society was held in the Medical Institute, Belfast, on November 3rd. The ex-President, Dr. Thomas Houston, after the minutes had been read, introduced the president for the ensuing session, Dr. Robert Hall. A hearty vote of thanks was accorded to Dr. Houston for his services to the society and his conduct of the chair during the past year. The President referred in feeling terms to the sad death from accident of Dr. Louis Jefferson during the past year, and after some introductory remarks went on to discuss the subject of his address, which was "Some rare conditions of lung disease." The first he mentioned was that of a large cavity which, owing to some peculiarities, simulated pneumothorax. He then gave notes of cases of "ballooning of the lung"; of bronchopleural fistula, some relieved by aspiration, and others unsuccessfully incised and drained; of a case of huge effusion which developed some temporary pneumothorax three days after each aspiration, but in which no lesion to account for such a phenomenon was found after death; of interlobar empyemata, some cured by aspiration after pneumonia; and of primary acute congestion of the lungs, to be distinguished from oedema of the lungs. Dr. Gardner Robb proposed, and Dr. W. Burns seconded, a hearty vote of thanks to the President for his address, which was passed with acclamation; Dr. Hall replied.

Roll of Honour.

Dr. Houston, ex-President, explained that when Dr. McKisack was President of the Ulster Branch of the British Medical Association in 1918–19 he (Dr. McKisack) desired to do something to form a permanent remembrance of those who had left their homes and practices and served abroad; he had submitted a design for a roll of honour to the council of the society, which had approved the suggestion and accepted the offer with grateful thanks. The plan had now come to maturity, and he asked the President to unveil the memorial. The President then drew aside the large Union Jack which covered the roll of honour, and said that he accepted it on behalf of the society; all the Fellows and Members then stood up and sang the National Anthem. Professor Lindsay proposed a hearty vote of thanks to Dr. McKisack for his gift. Members of the society, he said, had played their part brilliantly in the war. The motion was seconded by Professor R. J. Johnstone, who gave further details of the inception of the scheme and the great interest Dr. McKisack had taken in it. The President conveyed the vote to Dr. McKisack, who returned his warm thanks for the kinds words and for the reception by the meeting; he was proud and glad to have an opportunity, as he was sure all present were, of showing their appreciation of the services of those who had done so much for them. He gave his best thanks to Dr. Robert Marshall, the acting secretary, who had taken much trouble in getting the names and seeing that there were no inaccuracies nor omissions. The roll of honour takes the form of a handsome finely polished oak frame, with the Ulster coat of arms at the top and "Ulster Medical Society" immediately beneath, with at the bottom "1914–1919." There are 130 names in parallel columns with their rank and services, in sunken gold letters; in the case of those who died on service the date and fact are recorded.

Correspondence.

ON THE OPERATION OF PROSTATECTOMY.

SIR,—In your issue of October 15th I was pleased to see a note of vindication of Professor A. F. McGill's priority over Freyer in advocating and in performing an intended and methodical enucleation of the prostate gland. It gave me especial satisfaction because from time to time, in discussions at the meetings of the British Medical Association, I have insisted upon the fact—in vain. I have also insisted on these occasions upon the further fact that the actual priority or primacy is due to American surgery, the cases of Amussat (1827) and Dittel (1885) and Benno Schmidt (1886) being exceptional. The cases cited in proof were well known to us on this side of the water, in which Belfield of Chicago (1886) and Eugene Fuller of New York were the pioneers (1890). Mr. Atkinson's case at Leeds in 1889 is not generally known, I think, on this continent, and adds to the obligation we owe to Sir Clifford Allbutt's and Mr. Harry Littlewood's communication in your columns. It is not surprising that a practitioner of so much activity as was Freyer in his twenty-one years of much occupation in the North-West Provinces of India should be ignorant of American medical literature at that time; and in his lectures delivered in the Medical Graduates' College in November, 1900, and in the first and second editions of his work on *Enlargement of the Prostate* that lack of acquaintance therewith is still evident. But in the third edition, of 1908, p. 107, recognition is made of the work of both Belfield and McGill, which, however, was neither adequate nor generous, and this notwithstanding that Mansell Moullin, in the third edition of his *Enlargement of the Prostate*, published in 1904, with which it is hardly conceivable that Freyer could be unacquainted, gives chapter and verse and full acknowledgement of their priority.

The proverbial differences of doctors, though usually saddled upon the medical profession, doubtless had primary reference to doctors of theology and casuistry, and I shall ask leave to make a quotation which may have an application in both ways. It is from Professor Hugh Hampton Young's (Johns Hopkins) article on hypertrophy of the prostate in the fourth volume of Keen's *Surgery*, on p. 433:

> "That the first complete suprapubic prostatectomy was done by Eugene Fuller of New York, in 1894, is (*sic*) well established, and we cannot understand why some of his fellow countrymen should have given the credit of this to Freyer, who made his 'discoveries' five years later, and after he had attended a meeting of the International Medical Congress in Paris in which Guiteras described the details of the method which was employed by many of us in America. I was with Guiteras, and in fact participated in the writing of his paper, so that I can substantiate his assertions that if Freyer did not then learn the method from him he failed to avail himself of his opportunities."

Toronto, Oct. 28th. I. H. CAMERON.

P.S.—Apropos of Mr. Zachary Cope's letter in your issue of October 1st, p. 539, let me direct your attention and his, although it is hardly worth while, to a squib upon "Acute Abdomen" in the *Canadian Medical Association Journal* for April last, p. 277.

ERYTHEMA NODOSUM.

SIR,—As a general practitioner intrigued by the enigma of erythema nodosum, I have read with interest the communications of Dr. J. Odery Symes and Dr. A. Hope Gosse. It is high time the profession made up its mind on this problem. Both these authorities dismiss in the directest way the rheumatic hypothesis; but I am not converted. Indeed, what they say only serves to confirm in me the notion that rheumatism (whatever rheumatism may mean) does play a part in causation.

And that raises a question put by G. K. Chesterton in one of his Dickens prefaces, "How far can an author tell a truth without seeing it himself? Perhaps an actual example will express my meaning. I was once talking to a highly intelligent lady about Thackeray's *Newcomes*. We were speaking of the character of Mrs. Mackenzie, the Campaigner, and in the middle of the conversation the lady leaned across to me and said in a low, hoarse, but emphatic voice, 'She drank. Thackeray didn't know it; but she drank.' . . . How far can a writer thus indicate by accident a truth of which he is himself ignorant? . . . The author sees only an arc or fragment of a curve; the reader sees the size of the circle."

At every turn of Dr. Symes's abstract of his address I found myself asking Chesterton's question. Dr. Symes began by doubting "the rheumatic origin," and asserting that "amongst practising physicians" that view is "fast disappearing"; but always, as he proceeded, he flung out hints that a general practitioner could only read as evidence of the guilt of rheumatism—the reference to a nurse who had "pains in the limbs with fever" before erythema nodosum appeared, and "the night nurse of the same ward" with "fever and arthritis" before the rash; the parallel he draws between this disease and chorea ("a cerebral form of rheumatic fever"); his surmise that "the specific infective agent gains entry by the tonsils"; his admission that "convalescence is generally prolonged" and relapses "not uncommon" and arthritis "rather more frequent than in other acute fevers"; his failure "to grow an organism from the blood"; his note on the low "degree of immunity conferred," and history of a case in which were combined "tonsillitis and erythema nodosum with endocarditis and pericarditis" and "a strong rheumatic family history." . . .

All the suggestive passages are not epitomized there, but to me these things say only one word—rheumatism. And Dr. Gosse's letter, with its conjunction of tonsillitis and erythema nodosum, does not alter the impression. Such recent work as A. Lambert's at Bellevue Hospital, New York, and P. D. White's at U.S. Base Hospital No. 6, and H. Nordlund's at the Sabbatsberg Hospital, goes to prove the link between tonsillitis and rheumatism. And personal experience compels me to expect benefit from salicylates in erythema nodosum.—I am, etc.,

Belfast, Nov. 14th. ROBERT WATSON.

SIR,—The doctrine of the non-rheumatic origin of erythema nodosum has interested me ever since I received it from the late Dr. David Lees, fifteen or more years ago. The broadest facts upon which it rests are that children riddled with acute rheumatism extremely seldom show the rash of erythema nodosum, and that relapses and recrudescences are as conspicuously absent in erythema nodosum as they are a cardinal feature of children's rheumatism. On both these points Dr. J. Odery Symes has laid emphasis in his paper published by you on November 5th. But there is a third, and to my mind a still more weighty argument—namely, that erythema nodosum does not conform to the clinical picture of the rheumatic infection. In rheumatism haemorrhagic lesions always denote the severest forms of the infection, whereas in erythema nodosum we see a haemorrhagic rash accompanied by a minimum of other "rheumatic" manifestations (arthralgia and fever, but no severe acute carditis, no chorea, no nodules, etc.). I think this is conclusive; and I may add that the same three arguments serve to separate "peliosis rheumatica" (Schönlein's disease) from the rheumatic infection. Considering the damaged state of the tonsils in rheumatic children it is not to be wondered at that occasionally these patients will show erythema nodosum or "peliosis rheumatica."

Dr. Symes is perhaps a little sweeping in his condemnation of the immutability of textbooks, and, did modesty permit, I could refer him to at least one obscure volume on the medical diseases of children (dated 1911) in which the true faith is maintained.—I am, etc.,

London, W., Nov 11th. REGINALD MILLER.

SIR,—The following notes of cases which have recently occurred in our practice may be of interest, in connexion with Dr. Symes's article on erythema nodosum (p. 741) as a specific infective disease.

May M., aged 21, consulted one of us on September 10th with sore throat; the temperature was 103°, and there were well-marked nodes on both shins, with a history of having been ill for some days. The rash had been present for a couple of days. Nodes also appeared on the extensor aspect of both upper and forearms, and also on the malar regions. Phlyctenules were present in the right eye. She progressed under salicylates, although their effect on her general condition was doubtful, and they certainly did not reduce the pyrexia, which came down slowly. They did relieve the severe joint pains. A fortnight later she had a definite relapse, with a fresh crop of nodes and return of pyrexia and joint pains. She then slowly got well.

Ivy M., aged 12, was seen on September 19th with well-marked nodes on both shins and a sore throat. The nodes later also appeared on the extensor aspect of the arms and joint pains were present. Her attack was much less severe, and she was well in about a fortnight.

Phyllis M., aged 17, also developed the disease; she was seen first on October 3rd. The crop of nodes was confined to the shins, and she complained of sore throat. Her attack was less severe than in the other two cases, the period of illness being about a fortnight.

The point is that all these cases are members of the same family. They were all girls. Each complained of sore throat, and it is interesting to note that each succeeding case was less severe than its predecessor.

The mother, at the time of the occurrence of the second case, volunteered the statement that her son, aged 20, had had similar "spots" before May M. was taken ill, but he was not compelled to seek medical advice.—We are, etc.,

KENNETH ANDERSON,
NORMAN C. COOPER.

Winscombe, Nov. 8th.

SIR,—The perusal of Dr. J. O. Symes's address leads me to publish the following case:

I saw a girl, aged 6 years, on October 17th, 1921. She had erythema nodosum over both shins, and a few abrasions of skin, due to scratching. There was no history of rheumatism or any serious illness, except an operation for removal of tonsils and adenoids some time ago. Her father and her brother were healthy. The mother I have been attending for a bronchial affection and ulcerated cervix uteri. The girl was not very ill, and had apparently recovered by October 24th. On October 27th she appeared to be suffering from a slight catarrh. From October 28th to November 2nd she gradually became worse, complaining of frontal headache, and there was obstinate vomiting. She lay on her right side with the head bent forwards, the chin touching her neck, the upper and lower limbs flexed on the body. No adventitious pulmonary sounds were heard; the respiration was regular; both inspiratory and expiratory efforts were prolonged, with only a momentary pause. Cardiac sounds were feeble and the pulse very slow. The temperature was normal; she was semiconscious, but could be roused; deglutition was good, but there was constant grinding of teeth. The patellar reflex was absent, the plantar present. She remained in much the same condition until November 8th, when the cardiac sounds and respiration became more normal. Later in the day coma set in, the pupils became dilated, and there was incontinence of urine, but not faeces; the bowel (rectum) had to be emptied. All reflexes were abolished except extension of both great-toes. The upper and lower limbs assumed a normal position, and she lay on her back. The temperature was not more than 100° throughout the illness. She died on the morning of November 10th.

My first impression was that she was suffering from an acute toxaemia of streptococcal origin, the seat of infection being the abrasion of skin over the tibia—that it was the exciting cause of developing in a tuberculous constitution an active tuberculous meningitis.—I am, etc.,

J. DUNCAN HOWE.

Preston, Lancs, Nov. 13th.

THE COLON AND COLITIS.

SIR,—The able and practical address of Lord Dawson on colitis (BRITISH MEDICAL JOURNAL, July 9th) deserves the very closest attention, especially where he emphasizes the importance of the detoxicating influence of the liver and the association between muscular failure—so frequently the essential factor—with the disappointing results in so many cases of operative procedure. Recently among Continental workers numerous—and what would appear to be precise—physiological researches have been conducted concerning the etiology of entero-colitis, and as a result treatment on comparatively new lines has been suggested and practised with advantage.

It appears to be clearly established that the pathognomonic symptoms of the disease at the onset may be attributed to alterations in the functions of the liver, which does not secure the inhibition of the coagulating ferment, the proper elaboration of the fats, nor the antifermentative power of the intestine. To meet the deficiency bile or bile extracts have been employed, but with indifferent success. The constipation and pain are relieved and the membranous matter in the excreta becomes progressively less, but diarrhoea is apt to supervene, and on cessation of the treatment there is a return of all the symptoms. Repeated examinations of the faeces have established, besides, the existence of muscular fibres and grains of starch not attacked, which indicates that there is also insufficiency of the duodenal and pancreatic secretions. It appears that there is a curious synergia between all these organs, and that the chemical agent is a hormone—the secretine of Bayliss and Starling—which is produced by the duodenal mucous membrane, circulates in the blood, and excites the secretion of the bile, intestinal juice, and above all the juice of the pancreas.

Pavlov and others have discovered in the duodenum and jejunum a singular ferment called by them entero-kinase, and which has the property of transforming protrypsine inactive into trypsine active; it has been found that if a trace of this is added to pancreatic juice, collected free from all contact with intestinal secretion, albuminoids are digested, whereas they are unaffected by the pancreatic juice alone. It follows that intestinal and pancreatic digestion is not perfect unless the duodenal mucous membrane is intact and furnishes the secretine and the kinase.

The pathology of membranous entero-colitis is thus very complicated, and although it may appear as if the influence of the liver were preponderant, it may eventually prove that the biliary insufficiency is but a consequence of alterations the seat of which is in the first intestinal segment. It has been suggested that an associated therapy would be beneficial, and the biliary extracts and the extracts of the duodenum—such as choleokinase, for instance—have proved of marked benefit in many cases. Briefly, all the symptoms are relieved, but what, it may be inquired, is the cause of such a complicated, distressing and intractable malady? Lord Dawson suggests disturbed motor function and disturbed secretion, which would appear to confirm the views already stated; but it would seem from various facts founded on clinical data, such as the great increase within recent years of affections of this nature, as well as the temperament of the persons generally affected, that the primary cause rests in the central nervous system.

We cannot disregard the fact that most patients suffering from this disease are "emotionalists"—that is to say, there is disorganization of the sympathetic. It is not to be wondered at that colitis should be so frequent in those classed as psychoneurotics, and that it appears in certain forms, such as fixed ideas and obsessions of which the oscillations follow the disease itself. Distant parts also exercise an influence, such as rectal irritation, intestinal stasis and appendicitis, and lesions of the uterus, ovaries, etc. It is important to emphasize that the treatment of these affections often improves the entero-colitis and *vice versa*.

From these facts it would appear to be established that a synergia exists, the essential factor of which rests in the sympathetic, but that it has to be put into play by various reflexes when a state of disorganization exists. The following case may be of interest in this connexion:

A lady, aged 40, for several years had suffered from colitis. Diarrhoea, with eight to ten motions a day, has been a prominent symptom, with much mucus. Certain articles of diet, especially meat and vegetables, aggravated the intestinal symptoms and also produced an intense urticarial rash all over the body, accompanied with much smarting and itching. The rash was pinkish-red and looked like angio-neurotic oedema in the face and hands. The lips were invariably pale in colour. This lady had much treatment, both here (Egypt) and in England, without deriving benefit.

The treatment employed, and which practically effected a cure, consisted of sulphur baths, saline intestinal lavage, permanganate of calcium gr. 1/4 in a tumblerful of water several times a day, and, in addition to light diet, cooked apples and the papaw fruit in abundance. After remaining in good health for twelve months she became pregnant, and during the ensuing period of nine months the bowels acted normally and she had not a single attack of the rash. This satisfactory state of affairs continued until five months after the birth of her child, when there was a return of the rash in a severe form, which, however, promptly yielded to the same treatment as formerly, combined with arsenic and calcium lactate. The bowels have acted normally for nearly three years.

The theory of an infectious origin of the disease has a certain number of adherents, especially as certain microbes, particularly the *Bacillus fluorescens* and *proteus vulgaris*, have been regarded as the cause of the malady. However, these microbes are common hosts in the intestine and their multiplication has been attributed, not to contamination properly so called, but simply to a deficiency of the biliary secretion and trypsigen, to a diminution of antiputrid and antitoxic power, which gives support to the hepatic-pancreatic-duodenal pathology already alluded to. Nevertheless the part which the toxins and microbes play

in aggravating the symptoms cannot be ignored, and explains probably the symptomatic relief obtained from such drugs as calcium permanganate.

It is fairly clear that the immediate cause of entero-colitis is due to disturbances in the biliary and duodenal secretions and without doubt also in the pancreatic, but that the remote causes reside in the disorganization of the sympathetic, which regulates the functions of these organs as well as the vasomotor system. The sympathetic in its turn is affected by multiple causes, hereditary or acquired, cerebro-spinal, alimentary infection, etc., but it remains the necessary intermediary. It is but a question of time when muscular failure supervenes, and, to quote Lord Dawson's words, "given failure in the function of movement, in the function of secretion (internal and external), and the consequent irregularities of putrefaction and deranged absorption, and colitis receives a large measure of explanation."

The treatment which has been found the most efficacious is, after attention to any concurrent trouble, comprised under a moderate regimen, regulated exercises or repose as the case may be, and the employment of few drugs. The diet is of vital importance, but it must be altered to suit the idiosyncrasies of each individual: some do well on fillets of beef, for instance; others cannot touch it; cooked fruit, especially apples, and the papaw, when it can be obtained, are invaluable, especially the latter, which I look on almost as a specific; eggs are also well tolerated when lightly cooked or raw. As regards drugs, calcium permanganate will be found very useful in many cases; there may be a great future before choleokinase, secretogen, and such preparations.

As the psychic craze has not yet reached here, no opinion can be expressed about its effects on a pathological entity like colitis, but it is different with purely physical remedies, which are undoubtedly invaluable. As regards the psychic treatment, it is possible that the physicians who established great reputations at other times by the employment of certain drugs, now completely discarded, must have exercised some such influence, but ethically, scientifically, and unostentatiously.—I am, etc.,

T. Gerald Garry, M.D., M.A.O., M.Ch., M.B.E.

Cairo, Aug. 5th,

THE TREATMENT OF INTERNAL HAEMORRHOIDS BY INJECTION.

Sir,—Nearly every speaker at the meeting of the Section of Proctology at Newcastle referred to the treatment of internal haemorrhoids by injection. Nearly all admitted that their experience of the treatment was very limited, or stated that the method had a definite, though limited, place in the treatment of internal piles. That it is applicable to every case I, at any rate, have never for a moment alleged. But, like that accurate and shrewd observer, the late Sir James Goodhart, who certainly had no axe to grind, I do urge that its sphere of usefulness is very much wider than most operating surgeons will allow. That the public are beginning to realize this, and that the 2,000 cases I treated by this method at St. Mark's Hospital between 1914 and 1917 were very successful is proved, I think, by Sir C. Gordon-Watson himself, when he states that "It would appear from inquiries made at St. Mark's Hospital that there is a prevalent impression that this form of treatment is freely practised there—an impression which may have arisen from an article having been written on the subject in the British Medical Journal by an advocate of this method who did temporary work at St. Mark's during the war." I assume that I am the advocate to whom he refers. What I cannot understand is Sir C. Gordon-Watson's reason for reviewing only 49 cases—presumably not cases of mine, since no case of perineal abscess occurred in the series of 2,000 or so cases which I estimate that I treated in the three years—when he might have dealt with the very large number of cases that were under my own care.

Some little time ago I made inquiries of 300 private cases which I had treated upwards of three years previously, and received replies from the majority of them. Of these, 83.4 per cent. reported themselves absolutely free from rectal symptoms, and many of the remainder merely mentioned trivial symptoms, such as "occasional uneasiness." These figures compare quite favourably with those obtained by operation. Indeed, I meet almost daily with patients who have suffered relapse after operation—performed in some cases by recognized rectal experts—and who shudder at the idea of submitting again to what they describe as "the nightmare" they endured after their operations. No patient ought to have cause to refer in these terms to treatment by injection.

A strikingly long list of complications after operations—including several deaths—is referred to by many of the Newcastle speakers. As far as I am concerned, my list of complications after injection consists of six cases of recurrent haemorrhage—easily dealt with by clamping a vessel through a speculum—and a very few cases of pain necessitating confinement to bed. The latter cases were due to thrombosis, probably from using a little too much of the solution. I also had one case in which an external pile became inflamed and suppurated shortly after internal piles had been injected. The vast majority of cases are relieved of all symptoms from the moment of the first injection, do not have to miss a day's business, and appear to be permanently relieved of their piles.

Some of the speakers said that they never injected more than one, two, or three piles at a sitting, and most spoke as if they imagined that one injection is sufficient. My own practice is to deal with as many piles as are present, and to repeat the injections at weekly intervals until no more trace of piles can be seen on visual examination through a speculum. The average number of injections which I find necessary is four; rarely or never have I found one injection sufficient to cause total disappearance of the piles, and still more rarely have I found more than six injections necessary. If this be compared with the time lost in the preliminary treatment for operation, the ten days in bed after operation and the customary period of convalescence after leaving the nursing home or hospital, and if the formidable list of possible complications be compared with the very few and trifling complications after injection that I have met with, I think most would decide on injection rather than operation when their own turn came. That this is true is shown by the disproportionate number of medical men who have been to me for injection and who are amongst my 83.4 per cent. of complete successes.

Sir C. Gordon-Watson made some sweeping statements about supposed complications after injection, but on what authority he omitted to mention. Nevertheless, he summed up by saying that "Treatment by injection is entitled to more consideration than it has received in the past," and that "we ought to give a more extended trial to this method, especially amongst those who can ill afford the time to lie up." I am encouraged by this to hope that he will be as good as his word, and feel sure that, when he has gained a large experience of injection treatment, he will be more ready to meet that public demand for it that he has told us already exists.—I am, etc.,

London, W.C., Oct. 22nd. Arthur S. Morley, F.R.C.S.

THE CURE OF SLEEPING SICKNESS.

Sir,—In August last it fell to my lot as Sectional Editor of the *Tropical Diseases Bulletin* to write a critical review of recent work on sleeping sickness. For reasons which are clearly stated at the commencement of my review, I decided to deal mainly with the work of Marshall and Vassallo. Judging from Dr. Jensen's letter, published in your issue of November 5th, this review has caused considerable distress to him and to a recently self-constituted body, the Tropical Diseases Prevention Association, of which he is the honorary secretary.

I may say at once that until I read an annotation in the *Lancet* of September 10th—the day on which my critique was forwarded to the Tropical Diseases Bureau for publication—I was ignorant of the fact that Dr. Jensen's association was acting as sponsor to Marshall and Vassallo. My object in writing the review was simply to present to the readers of the *Tropical Diseases Bulletin* a critical analysis of the work on which Marshall and Vassallo based their sweeping claims, and as the result of a most careful consideration of their papers I reached the following conclusions:

1. The work is based on two fundamental assumptions, both of which are incorrect, or at least can only be accepted with very considerable qualification.

2. The treatment is not new, even for trypanosomiasis, but is substantially the same as that tried by Reichenow in 1914, and

abandoned by him as useless in that it failed to sterilize the cerebro-spinal fluid.

3. Marshall and Vassallo produce no satisfactory evidence that intrathecal injections of salvarsanized serum sterilize infected cerebro-spinal fluids.

4. The results, so far published, fail to substantiate the claim that the treatment gives better results than any hitherto obtained by other methods.

Scientifically Dr. Jensen's letter is of no value, as he does not attempt (probably because he is unable) to controvert the arguments on which I based these conclusions. He points out that the work done by Marshall and Vassallo was performed by them as Uganda medical officers and in their spare time. This may account for the unsatisfactory nature of Marshall and Vassallo's observations, but it certainly does not invalidate my conclusions, nor is it likely to inspire belief in Marshall and Vassallo's claims, or respect for the judgement of Dr. Jensen and his association.

Dr. Jensen, however, is mainly concerned in defending the position of the Tropical Diseases Prevention Association, and in view of the youth of this body it would, naturally, resent anything which might suggest that it had been guilty of a gross error of judgement. Even though willing to make full allowance for his sensitiveness on this point I cannot refrain from pointing out to Dr. Jensen that he has descended to somewhat questionable tactics.

In the first place, he states that I published my critical view "in a medium which precluded the possibility of a reply." This is an unpleasant suggestion, and in view of the publication of his lengthy letters in the British Medical Journal and in the *Lancet*, the complaint seems unjustifiable. I do not know whether he has communicated with the Editor of the *Tropical Diseases Bulletin*, but although I can well believe that a letter of the kind in question might be refused publication, I do not believe that anything of scientific value would be rejected.

In the second place, Dr. Jensen loudly protests that his association "is not prejudiced in favour of any one method of treatment, but it does consider that fair play should be given to any method which has shown promise of success." Such platitudes may satisfy Dr. Jensen and certainly they do nobody any harm, but it is rather amusing to read in the next line that one who has had the temerity to differ from the association on a matter of the value of evidence is accused of lacking a sense of fair play. In fact there is a delicate insinuation that I have purposely belittled Marshall and Vassallo's work in order to promote the interests of a certain German chemical firm.

Dr. Jensen's letter closes with a remarkable homily which runs as follows:

> "It is, perhaps, not fully recognized by tropical experts working at home that treatment of such a disease as sleeping sickness must be administratively and economically practicable on a large scale as well as scientifically effective in a hospital at home."

Possibly this is the case, but how it touches the question at issue is obscure, unless it is intended to have a personal application. If so, I can only point out that it comes strangely from the pen of one who, so far as I am aware, has contributed nothing to our knowledge of the disease, and deplore the fact that one who is so little conversant with the literature of the subject should have attempted the task which Dr. Jensen has undertaken.—I am, etc.,

Warrington Yorke.

Liverpool School of Tropical Medicine,
Nov. 14th.

*** Readers of the British Medical Journal will find details of the claims of Drs. Marshall and Vassallo in Dr. Marshall's paper published in the Journal of May 22nd, 1920, p. 702; in their joint paper published on May 28th, 1921, p. 773; and in the report of a discussion at the Royal Society of Tropical Medicine, published on May 28th, 1921, p. 777.

THE FIRST OVARIOTOMIST.

Sir,—In the British Medical Journal of November 12th, p. 775, there is published an address by Sir Harold Stiles, delivered at the Convocation of the American College of Surgeons, Philadelphia, October 28th, 1921. Sir Harold is reported to have made the following statement: "Lizars, who was appointed Professor of Surgery in the College of Surgeons, Edinburgh, in 1831, is well known in America as being the first surgeon in Great Britain to perform the operation of ovariotomy, which had been introduced by McDowell."

The distinction, however, of having performed the first ovariotomy falls to a surgeon practising in Glasgow, and a graduate of Glasgow University named Dr. Robert Houston. I append the following extract from an article, "Dr. Robert Houston of Glasgow, the First Ovariotomist," contributed to *Janus*, Amsterdam, by Dr. James Finlayson of Glasgow, in the number November–December, 1896:

"If the question were put, 'Who performed the first ovariotomy?' nearly everyone would answer—Ephraim McDowell in America. But it has long been known, in various quarters, that Mr. Robert Houston, while practising in Glasgow, successfully performed this operation fully 100 years before McDowell's first case, or 70 years before McDowell was born. His case is quoted in the Index Catalogue of the Surgeon-General's Library at Washington, under the heading of 'Ovariotomy, History of,' and the date of the operation is there correctly given as 1701. It was admitted as a genuine case of ovariotomy by Dr. Atlee, the American ovariotomist, as far back as 1849, who called attention to it in a letter to the editor of the *American Journal of Medical Sciences*, April. 1849, p. 534; he there gives a copy of the report of the case. Houston's paper appeared in the *Philosophical Transactions* of the Royal Society of London, vol. 33, London, 1726. The delay in reporting the case enabled him to state that the woman remained well till shortly before her death in 1714. The title of Houston's paper is 'A dropsy of the left ovary of a woman aged 58 years, cured by a large incision made in the left side of the abdomen.' Not only is the case admitted to be a genuine ovariotomy by Dr. Atlee, but it is also given at length by Lawson Tait in his *Diseases of the Ovaries*, fourth edition, Birmingham, 1883, p. 238.

"An element in the successful result of the ovariotomy case lay, no doubt, in the dressings applied: 'Several compresses dipped in warm French brandy; and because I judged that the parts might have lost their spring, by so vast and so long a distension, I dipped in the same a napkin four times folded, and applied it over all the dressings, and with a couple of strong towels which were also dipped, I swathed her round the body.'"

The name of Houston may have escaped the notice of Sir Harold Stiles, and I thought this matter of sufficient interest to bring before your readers.

The following particulars may be appended:

Robert Houston, 1664 (?)—May 15th, 1734.

Born and educated in Glasgow; son of a Glasgow surgeon, M.A. Glasgow. Member of Glasgow Faculty a little after 1684. Obtained M.D. from Glasgow University, 1712; their third Doctor of Medicine. F.R.S.Lond., 1725. First ovariotomy performed by him whilst practising in Glasgow in 1701—that is, seventy years before Ephraim McDowell was born. Subsequently practised in London.

Works.—Report of his ovariotomy case in *Philosophical Transactions* of the Royal Society of London, vol. 33, London, 1726. Also an important case of extrauterine pregnancy in the same *Transactions*, vol. 32, London, 1725. Also two books: *Lithotomus Castratus*, etc., London, 1725; *The History of Ruptures*, etc., London, 1726.

—I am, etc.,

J. Finlayson Fleming, M.B., Ch.B.

Dunfermline, Nov. 12th.

NATIONAL PROVIDENT HOSPITAL ORGANIZATION—SUSSEX SCHEME.

Sir,—I will endeavour, as briefly as possible, to traverse some of the animadversions upon the contents of my letter in the Supplement of October 22nd, as respectively contained in—

1. The three-starred footnote, appended to that letter, I protest is quite superfluous. Had your contributor read that part of my letter commenting on the silence of the Journal with average intelligence he would have seen that my interrogation referred to a time incidence ("concurrent with or since the publication of the manifesto of the Organizing and Executive Committee of the National Provident Scheme in the correspondence columns of the Journal, September 17th") subsequent after the publication of the articles which he refers to as evidence to the contrary, and the existence of which I was quite aware, and took for granted was known to most of your readers at the time I compiled that letter. In any case, the contents of these articles only amount to a narration of consecutive developments in the progress of the scheme, and do not contain a single comment or criticism on the merits of the scheme or the questionable way in which the scheme was being rushed by its committee; nor does your contributor deny that "concurrent with, or since, September 17th, no allusion to

this important point" (that is, the attitude of the general body of the profession) "has as yet appeared in the JOURNAL." While I do not pretend that the syntactical arrangement of the words in the foregoing parenthesized quotation may be most happily expressed, for your contributor to infer, as he elects to explain, in the last sentence of the footnote, for the benefit of your readers—"the letter, to which we understand Dr. Muir Smith refers as a manifesto, followed in the JOURNAL, September 17th"—surely would not unduly tax the perspicacity of the merest office tyro to clarify.

2. Dr. J. F. Gordon Dill's letter, JOURNAL, October 29th, pp. 719–20. The specious claim put forward by Dr. Gordon Dill in paragraphs 2, 3, and 4, that the National Provident Scheme has received the imprimatur of the British Medical Association is effectually disposed of by Dr. C. O. Hawthorne in his letter in the JOURNAL of October 29th, pp. 720–21.

In face of the incontrovertible fact that the whole of the medical profession in Sussex was not consulted before the Sussex Scheme came into operation, the assurance of Dr. Gordon Dill, in the last sentence of paragraph 4 of his letter—that "the principle upon which the Organizing and Executive Committee of the scheme have always acted, and will continue to act, is that no step of importance shall be taken until the medical profession has been consulted about it"—is worth as much as the proverbial "scrap of paper."

In the fifth paragraph Dr. Gordon Dill, after transcribing a sentence from the eighth paragraph of my letter, proceeds to differentiate between a consultative and a general practitioner scheme, and goes on to conclude: "In fact, it" (Sussex Scheme) "does not provide any of the services of a club practice, and few, if any, of the services which it does provide were ever undertaken by the doctor of a club." In that quotation I purposely qualified the appellative by "glorified" (that is, exalted) to show that I recognized the distinction without admitting the difference between the Sussex Scheme and an ordinary provident scheme, such as the Eastbourne Provident Medical Association—a general practitioner scheme—which also provides consultative and dental services. The way or manner in which either form of scheme discharges its contractual liabilities, being purely a matter of detail, does not affect the fundamental operation of contract capitation practice being common to both, nor does it eliminate the bargaining spirit—gambling in the treatment of human illness—from either, which pernicious element has brought disrepute upon contract capitation practice, which the profession has only tolerated as the lesser of two evils (friendly societies and family clubs), or undertaken under the dire compulsion of statutory enactment (National Health Insurance). I, therefore, cannot admit that Dr. Gordon Dill is entitled to claim for the Sussex Scheme any exemption from the odium attached to club practice, on the ground that it is a consultative scheme designed for the benefit of voluntary hospitals. Here the analogy ends and a sharp divergence begins between the two forms. The Committee of the Sussex Scheme is composed entirely of *laymen*, that of the Eastbourne Association entirely of medical practitioners. This difference in constitutional administration places the Sussex Scheme in the same category as a medical aid institution. The British Medical Association has laid it down as a *sine quâ non* that the medical profession shall be fully represented in the management of provident medical schemes and voluntary hospitals boards. What action does the Standing Committee on Voluntary Hospitals of the Association propose to take anent this flagrant disregard of the Association's fiat instigated by Dr. Gordon Dill, who, at the last meeting of the Sussex Branch Council, accepted full responsibility for the transformation of the personnel?

3. Viscount Selby's letter, honorary secretary to the Committee of the Sussex Scheme, published in the JOURNAL, October 29th, p. 720, traversing the objections to the scheme set forth in paragraph 6 of my letter, which he quotes in full *seriatim*, and which he characterizes as "some gross misstatements as far as Sussex is concerned," I will deal with in the order of their reference:

Quotation (*a*). If "There is not a word of truth in this," will Viscount Selby please explain how a *lay* committee can be in any "way representative of the *profession* in the county," and, if the committee is not a "Brighton caucus," what districts in the county, outside Brighton, Hove, and Preston are represented on that body?

Quotation (*b*) Viscount Selby does not contravene.

Quotation (*c*). If "This is not true," and as Dr. Gordon Dill admits that the scheme, *at present*, contains no such provision, will Viscount Selby please adduce any written or printed documentary evidence in support of his assertion?

Quotation (*d*). If "This paragraph is wholly misleading," does Viscount Selby deny the main point of my contention that these "two classes of persons who, with incomes of £400 and £500, . . . have hitherto been able to afford the private fees usually charged for such services, and whose claims to semi-charitable consideration have neither been demanded, urged, nor established"?

Quotation (*e*). If "This danger is purely imaginary," and if Viscount Selby is aware of the fact that the resources of the majority of the district hospitals are fully taxed in dealing with impecunious cases, will he please indicate in what way could the institutional treatment, demanded under a definite contract, say of 20 per cent. of the "first ten thousand" members, be effected other than through one of the two alternatives I have suggested?

Quotation (*f*). This Viscount Selby does not contravene. I quite agree that it is the indiscriminate administration of charity that has brought the voluntary hospitals well-nigh to the edge of bankruptcy, and not the least of those culpable in this respect is the Sussex County Hospital. The committee of the Eastbourne Hospital, unless under exceptional circumstances, will not admit any patient whose income from all sources exceeds £260 per annum, and then only on the written recommendation of the medical attendant. If this plan, a very proper safeguard, had been universally adopted, probably this question would never have arisen.

Quotation (*g*). Viscount Selby, being a layman, can hardly be expected to grasp the professional ethics of the analogy.

The sum of Viscount Selby's laborious efforts to "correct some gross misstatements" amounts to an exhibition of dialectic skill in making the best of an awkward brief. In the process of traversing these quotations he confirms a few, transposes some, and amplifies most of the statements therein. Viscount Selby's denials—"This is not true," "There is not a word of truth in this," and "This paragraph is wholly misleading"—are only forensic platitudes commonly used by counsel in defending a weak case. In any case these expletives are only Viscount Selby's opinions upon my representations, and, as Viscount Selby, in the opening paragraph of his letter, graciously concedes, "Dr. Muir Smith has as much right to his own opinion as anyone else," these extravaganzas leave me but little perturbed about the validity of my contentions. If in the course of my letter I have "so ingeniously misunderstood and misrepresented" the policy of the scheme, as Viscount Selby imputes, I can assure him that his "amazement" is not shared by the members of this Division.

4. Dr. L. A. Parry's letter, JOURNAL, November 5th, pp. 769–70. Dr. Parry's disclaimer, on behalf of the Brighton Division, is somewhat belated, and probably would never have been written but for the publication of my letter. Why Dr. Parry should parenthesize that sentence explanatory of his inadvertence in substituting "by Sussex" for "for Sussex" in the resolution submitted to the Annual Representative Meeting by Brighton, as if it were of no importance to one of the points I raised, is best known to himself. That this error should have escaped the notice of Dr. Parry, who drafted the resolution, and Dr. Fothergill, who sponsored the resolution at the Annual Representative Meeting—two of the most punctilious and clear-headed medico-politicians in the ranks of the Association—until the publication of my letter is scarcely credible.

5. Mr. Robert Sanderson's letter, JOURNAL, November 5th, p. 770. The two points referred to in the second paragraph of Mr. R. Sanderson's letter I have already dealt with. I made these statements on the faith of verbal information casually given to me at the beginning of this year. Why all this mystery about the genesis of the Sussex Scheme? Dr. Gordon Dill is generally accredited with the authorship, and he has not denied the impeachment. Mr. R. Sanderson is as well aware as I am that Dr. Gordon Dill is a physician on the staff of the Sussex County Hospital, and is engaged in consulting work. Be that as it may, one of the salient features of the scheme is that it has the whole-hearted support of the honorary medical and surgical staffs of the hospitals in Brighton.

With regard to the point raised in the third paragraph of his letter, it may surprise Mr. R. Sanderson to learn that, during the current year, to my personal knowledge, four panel patients (all women) paid five guineas each for

an *x*-ray examination; two, with incomes under £200, paid four guineas each for auto-vaccines; one man, income £2 10s. per week, paid twenty guineas for a surgical operation on his wife and six guineas per week for her three weeks' maintenance in a nursing home; and four, incomes under £150, three to five guineas each for minor surgical operations, besides many others who have willingly paid one to two guineas each for an ordinary consultation. These are samples of patients with incomes not exceeding £260. When we come to the other two classes, with incomes ranging from £260 up to £500, surely they are in a better position "to afford the private fees usually charged for such services," and if Mr. R. Sanderson still doubts the truth of my statement that the consultants and specialists here derive the greater part of their professional income "*from this very class of person whom the scheme is designed to attach to its membership*," I shall be pleased to send him the names and addresses of the consultants in this place, so that he can communicate with them and ascertain for himself the validity of my contention. Mr. R. Sanderson says: "The scheme will certainly not benefit the consultant." I never said, nor implied, that it would do so. On the contrary, I stated: "It is no part of the duty of the profession to devise ways and means to rehabilitate the finances of voluntary hospitals, least of all at the expense of its own members," and that is exactly what this scheme will do. It will not materially affect the consultant whose income amounts to a few thousands a year, but it will gravely affect the consultant whose income amounts to a few hundreds a year. If the operation of the scheme were confined to the Brighton district, then no objection could be taken by the Eastbourne Division to the limitation. Every district ought to know what is best in the interests of the local hospital, the medical profession, and general community. Now this scheme, being avowedly designed to attract members from all parts of the county, is nothing short of a coercive measure to bring every voluntary hospital into subservience. Whether a district hospital refuses or agrees to co-operate, the consultants are in danger of losing part of their incomes. By comparison the Eastbourne district is as much a self-contained district as Brighton is so far as institutional treatment, consultative and specialistic services are concerned. This is proved by the fact that only four in-patients and six out-patients from the Eastbourne district were treated at the Sussex County Hospital last year. *Yet* at the last meeting of the Sussex Branch Council, *when*, in response to my representations, *the members present unanimously appealed to Dr. Gordon Dill*, as a matter of equity, *to refrain from accepting for membership of the scheme the application of any person residing in the Eastbourne district, he obdurately refused to comply.* Yes, Mr. R. Sanderson, the scheme may be "altruistic in origin and intention," but it is malevolently ultra-altruistic in the incidence of its operation.—I am, etc.,

Eastbourne, Nov. 5th. WM. MUIR SMITH.

⁂ We hope that this correspondence may cease, or that, at most, any further letters may be confined to the correction of errors of fact. The subject is being discussed by the profession in many parts of the country.

MOTOR CARS: SPARE PARTS.

SIR,—There is one very important point with regard to the choice of a motor car which your expert has not touched upon.

It is the supply of spare parts. Many of your readers may not be aware that some of the British motor firms refuse to send these parts until they have been paid for. I remember on one occasion writing for a part which was valued at about 30s. I explained in my letter how necessary it was, as I required the use of the car for my professional work, and I could not drive it until the part arrived. I asked for it to be sent by the first train next morning and said my man would meet it. They did not send it. They did not even trouble to telegraph to me. They wrote a letter stating that the price of the part was 30s., and that on receipt of the amount it should be dispatched. This involved a delay of three days with its attendant worry and expense.

Nothing would induce me to purchase another car from this firm, and I would strongly advise any member of the profession, before placing an order for a car, to insist on a guarantee that spare parts shall be dispatched immediately on receipt of request.—I am, etc.,

J. LIONEL STRETTON,
Consulting Surgeon, Kidderminster Infirmary and Children's Hospital.

November 8th.

FRAUDS ON MEDICAL MEN.

SIR,—I was interested in your article, "Frauds on Medical Men," in the BRITISH MEDICAL JOURNAL of November 5th. In August, 1916, Edward Thomas Johnson came to my surgery—after having written several letters and called me up on the 'phone—with a similar yarn to the one he spun Dr. Hallett. He got a cheque out of me, but as soon as he had left I rang up the bank to stop payment as I felt I had been indiscreet. Johnson, however, managed to get payment from the bank; the bank had to lose the amount; about three weeks or a month afterwards Johnson was caught and sentenced to one year's hard labour for a similar offence. It is to be hoped that when he gets out again readers of the BRITISH MEDICAL JOURNAL will remember your warning.—I am, etc.,

Sale, nr. Manchester, Nov. 7th. C. S. ASHE.

Universities and Colleges.

UNIVERSITY OF OXFORD.

Elections to Fellowships.—Mr. E. G. T. Liddell, B.M., B.Ch., Trinity College, formerly Senior Demy of Magdalen College, has been elected to a Fellowship at Trinity College; Mr. M. H. MacKeith, B.M., B.Ch., Queen's College, has been elected to a Fellowship at Magdalen College, and has been appointed to a Demonstratorship in Human Anatomy.

General Board of the Faculties.—Dr. E. W. Ainley Walker has been elected a member of the General Board of the Faculties as a representative of the Faculty of Natural Science.

UNIVERSITY OF MANCHESTER.

THE following lecturers have been appointed:—Neurology: Dr. D. E. Core. Radiology: Dr. A. E. Barclay, O.B.E. Surgical Diseases of Children: Mr. H. H. Rayner.

The following awards have been made:—Leech Fellowships in Medicine: F. R. Ferguson, Eugenia R. A. Cooper. Graduate Scholarship in Medicine: G. V. Ashcroft. Tom Jones Memorial Surgical Scholarship: A. H. Southam.

UNIVERSITY OF GLASGOW.

THE following were among the degrees conferred on November 12th:

M.D.—*D. K. Adams, *T. J. Mackie (*in absentiâ*), *N. Morris, †Wm. Taylor, (*in absentiâ*), ‡Charles Cameron, ‡R. T. Grant, ‡R. C. Robertson, ‡H. W. Torrance (*in absentiâ*), J. Broadfoot, Ethel Crawford, J. P. Crawford, A. Garvie, W. H. Kerr, D. M. MacRae, Geo. Taylor (*in absentiâ*).

M.B., CH.B.—‡A. A. Bell.

* With honours. † With high commendation. ‡ With commendation.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on November 10th. Diplomas were granted to seventy-seven candidates found qualified at the recent examination. The names were printed in the report of the Royal College of Physicians published on November 5th, p. 772.

F.R.C.S. with Ophthalmology.

The following Regulations relating to the special course of study and examination in Ophthalmology for Fellows of the College were adopted by the Council:

1. The examination comprises anatomy, physiology, and optics in their relation to ophthalmology; clinical and pathological ophthalmology, and ophthalmic operations.
2. The examination consists of (*a*) two written papers, (*b*) a written and *viva voce* examination on patients, (*c*) operations, (*d*) *viva voce* examination upon pathological and anatomical specimens and upon ophthalmology in general.
3. The examination will be held in June and December.
4. Candidates must be Fellows of the Royal College of Surgeons of England, or have passed the Second Professional Examination for the Diploma of Fellow.
5. Candidates must produce evidence of having held the office of clinical assistant, house-surgeon, or registrar for a period of two years at an ophthalmic hospital recognized by the College for the purpose or in the ophthalmic department of a recognized general hospital, after obtaining a registrable medical and surgical qualification. (Note: No hospital or department containing less than ten beds for eye cases will be recognized.)
6. The conditions of Clause 5 may be modified at the discretion of the Court of Examiners in the case of a candidate (*a*) who holds, or has held, the appointment of ophthalmic surgeon or assistant ophthalmic surgeon to a hospital, infirmary, or dispensary; (*b*) who has carried out original investigations in any branch of the examination; (*c*) who has written a thesis or published work on any subject of the examination; (*d*) whose studies or practice have extended over a prolonged period of time without fulfilling the exact conditions.

7. The candidates must give four weeks' notice of their intention to present themselves for examination to the Director of Examinations, Examination Hall, 8–11, Queen Square, Bloomsbury, London, W.C.1, and forward at the same time the evidence required by Clause 5.
8. The fee for admission or readmission to the examination is £10 10s., and must be paid to the Director of Examinations three days before the examination commences.
9. A candidate who passes the examination will receive a certificate entitling him to describe himself as F.R.C.S. (with Ophthalmology).

The War Collection.—The President reported that he had, on November 4th, signed and attached the College seal to the agreement between His Majesty's Principal Secretary of State for the War Department and the Royal College of Surgeons of England relating to the custody by the College of the Army Medical War Collection of pathological, orthopaedic, and other specimens.

Welfare of the Blind.—A letter was read from the Clerk to the London County Council calling attention to a scheme for the welfare of blind persons in London, and to setting up under the scheme of a Central Council for the London blind for advisory and other purposes, and expressing the hope that the College will assist the London County Council in the promotion of the welfare of the blind by appointing a representative to serve upon the Central Council. Mr. J. Herbert Fisher was appointed by the Council to represent the College.

The Thomas Vicary Lecture.—This will be delivered on Thursday, December 8th, at 5 p.m., by Sir Charles Ballance, on "A g impse into the history of the surgery of the brain."

The Bradshaw Lecture.—This will be delivered on Wednesday, December 14th, at 5 p.m., by Mr. H. J. Waring, on "The operative treatment of malignant disease, its possibilities and limitations."

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT a meeting of the President and Fellows of the Royal College of Physicians of Ireland, held on November 4th, Dr. Robert Marshall of Belfast and Dr. Victor M. Synge of Dublin were sworn in as Fellows of the College, and Dr. Patrick Ley of Dublin was admitted a Member.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

AT the annual meeting of the Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow held on November 7th the following office-bearers were elected:—President: Dr. W. G. Dun. Visitor: Dr. W. R. Jack. Treasurer: Mr. George McIntyre. Honorary Librarian: Dr. E. H. L. Oliphant. Councillors: The President, the Visitor, the Treasurer, the Honorary Librarian, and Dr. James A. Adams, as representative to the General Medical Council (*ex officio*), Mr. R. M. Buchanan, Dr. Ebenezer Duncan, Mr. Henry Rutherfurd, Dr. A. K. Chalmers, Sir Kennedy Dalziel, and Mr. J. Mason Noble.

Obituary.

SIR GEORGE EVATT, K.C.B., M.D.,
Major-General A.M.S. (ret.).

MAJOR-GENERAL SIR GEORGE JOSEPH HAMILTON EVATT, K.C.B., Army Medical Service (ret.), died in London on November 5th, aged 77. He was born on November 11th, 1843, the son of Captain George Evatt, 70th Foot, educated at Trinity College, Dublin, and graduated M.D., with honours, in the Queen's University, Ireland, in 1863, taking the L.R.C.S.I. in the same year. He entered the army as assistant-surgeon on March 31st, 1865, attained the rank of surgeon-colonel on March 30th, 1896, and that of surgeon-general on November 20th, 1899, retiring on November 11th, 1903. During the old regimental days he served in the 25th Foot, the King's Own Scottish Borderers. From 1880 to 1886 he was medical officer of the Royal Military Academy, Woolwich; he was senior medical officer at Quetta in 1887–91; sanitary officer at Woolwich, 1892–94; secretary to the Royal Victoria Hospital, 1894–96; as colonel he was P.M.O. in Hong Kong from 1896 to 1899; and as surgeon-general was P.M.O. of the Western District, 1899–1902, and of the Western Command, at Salisbury, 1902–3, comprising what is now the Southern Command and part of Wales. He rejoined for service during the recent war, and served as president of travelling medical boards in the Western Command in 1915–16. When he first joined the Army Medical Department in 1865 he reported for service to an officer wearing the Waterloo medal; it was rather more than a century after Waterloo when he himself finally ceased to serve.

He had a long list of war service: Perak, 1875, medal with clasp; Afghanistan, 1879–80, capture of Ali Musjid, Bazar Valley Expedition, advance on Kabul, and relief of Sherpur, twice mentioned in dispatches, G.G.O. of November 14th, 1879, and *London Gazette*, November 7th, 1879, medal with two clasps; Sudan 1885, Suakin, action at Hasheen, advance on Tamai, mentioned in dispatches, *London Gazette*, August 25th, 1885, medal with clasp, and Khedive's bronze star; North-West Frontier of India, Zhob expedition, 1890, mentioned in dispatches, *London Gazette*, May 19th, 1891.

General Evatt had political aspirations, and thrice unsuccessfully attempted to enter the House of Commons as a Liberal, contesting Woolwich in 1886, the Fareham Division of Hampshire in the first election of 1910, and Brighton in the second election of that year. He did a large amount of public work of various kinds; with Sir James Cantlie he raised the R.A.M.C. Volunteers in 1883, founded the Medical Officers of Schools' Association in 1884, and drew up a scheme for the Army Nursing Service Reserve in 1886. He had been President of the Poor Law Medical Officers' Association, and honorary colonel of the Home Counties Division, R.A.M.C.(T.F.). He received the C.B. in 1903, a good service pension in 1910, and the K.C.B. in 1919.

He was the author of many works on military medical administration: *The Medico-Military Topography of the Persian Gulf and Euphrates and Tigris Valleys*, 1874; *The Causes and Cure of Army Drunkenness* (prize essay), 1876; *The Death March through the Khyber Pass*, 1879; *Army Medical Organization: A Comparative Examination of the Regimental and Departmental Systems*, third edition, 1883; *Suggestions for the Organization of the Volunteer Medical Service*, 1885; *The Medical Organization of the Base of Operations in War*, 1885; *The Duties of the Bearer Companies of the Medical Corps in War*, 1886.

General Evatt was an old member of the British Medical Association and for a time served on its Council. In 1904 he accepted a commission from the BRITISH MEDICAL JOURNAL to investigate the Irish dispensary medical service on the spot, and made a very full and careful report, which greatly influenced the subsequent policy of the Association. He was a man fertile in ideas and made a large number of contributions to the military and medical press, chiefly on the subject of army organization and the training of army medical units for war. He will probably be chiefly remembered for his persistent advocacy of the formation of the medical officers of the army into a Corps. A Royal Warrant finally establishing the Corps was issued in June, 1898, a few years before Evatt's retirement. He is among the four officers commemorated by the memorial at the Royal Army Medical Corps College to those who took the largest part in convincing the Government of the need for this reform.

In 1887 Evatt married Sophie Marie Frances, daughter of William Walter Raleigh Kerr, Treasurer of Mauritius, and had one daughter.

D. D. GOLD, M.D., D.P.H.,
Medical Officer of Health, Herefordshire.

WE regret to announce the death, in his forty-ninth year, of Dr. David Drybrough Gold, medical officer of health for Herefordshire, which occurred on November 4th, very suddenly from unsuspected heart disease. Dr. Gold received his medical education at Edinburgh University, where he graduated M.B., C.M. in 1896 and M.D. in 1904; in the latter year he also took the diploma in public health at Edinburgh. He was appointed an assistant medical officer under the Metropolitan Asylums Board, then assistant medical officer of health for the county of Essex, and became county medical officer of health of Hereford in 1909. He was the contributor of a number of articles on public health subjects to the scientific journals, and was a Fellow of the Society of Medical Officers of Health. He was a member of the British Medical Association, in which he took much interest, serving as a member of the Public Health Committee in 1920 and 1921; he was chairman of the Hereford Division in 1920, and was representative of the Division in the Representative Body. Dr. Gold was married only three years ago, and much sympathy has been expressed for his widow in her sudden bereavement.

WE regret to record the death, on November 8th, of Mr. HENRY HORSLEY, of Croydon, in his eighty-fourth year. Born at Kennington in 1838, Mr. Horsley received his medical education at Guy's Hospital, and qualified with

the diplomas of M.R.C.S. and L.S.A. in 1859. He was one of the first surgeons to the Croydon General Hospital, and in later life he was for many years consulting surgeon. He was a very old member of the British Medical Association, and was especially identified with the old South-Eastern Branch. Mr. Horsley is survived by four daughters and two sons, one of whom is a medical practitioner, and was educated at his father's old hospital. Mr. Charles Wray, F.R.C.S., writes: Mr. Horsley was one of several noteworthy characters pre-eminent for their ability and exceptionally high code of ethics. Amongst them were Alfred Carpenter, John Galton, Peter Duncan, and Sir Constantine Holman, all of whom in their day were ardent supporters of the British Medical Association and all the best it stands for. All who knew him will agree he was a credit to his hospital and to his profession.

The death occurred suddenly, on October 18th, of Dr. Ellerington Reed Turner, of Kintore, Aberdeenshire. He was born at Brora, Sutherland, fifty-nine years ago, and received his medical education at Aberdeen University, where he graduated M.B., C.M. in 1891. He commenced general practice at Kintore in 1895, and during his long connexion with the burgh took a keen interest in all public affairs. He was provost for nine years, held office in the school board and in the literary and other societies, and he was medical officer of Kintore and neighbouring parishes. He is survived by his widow.

Dr. A. J. McClymont died at Klerksdorp, Transvaal, on August 29th; he graduated M.B., Ch.B. at Edinburgh in 1898, and first went out to South Africa as a civil surgeon during the Boer war. At the close of that war he returned to England, but went back in 1906 to the Orange Free State. During the late war he served in East Africa, returning to practice in the Transvaal in 1919.

The death is announced at Roxbury, U.S.A., on September 4th, of Dr. Fanny Berlin, at the age of 69. Dr. Berlin, who was born in Russia, and graduated M.D. at the University of Zurich, Switzerland, was one of the pioneer women surgeons of the United States, having settled in Boston in the late seventies as resident physician to the New England Hospital for Women and Children. Subsequently she was appointed an honorary surgeon to that institution, and for many years had a large surgical practice in Boston.

Otto von Schjerning, head of the German Army Medical Service, and a well-known writer on military hygiene, has recently died.

The Services.

INDIAN MEDICAL SERVICE.

Pensions.

An officer of the Indian Medical Service writes to suggest that in reproducing in our issue of September 3rd the revised rates of pensions in the I.M.S. we ought to have repeated the statement that these revised rates will be subject to alteration, either upwards or downwards, after July 1st, 1924, to an extent not exceeding 20 per cent., according as the cost of living rises or falls, and that after 1924 a further revision may take place every three years. These facts were set forth in the Memorandum issued by the India Office last year, and the references to the Indian Medical Service were printed in full in our issue of June 12th, 1920, p. 813.

The second annual dinner of medical officers of No. 14 Stationary Hospital, B.E.F., will be held on Friday, December 9th, at the Trocadero Restaurant, London, W., at 7.15 p.m. for 7.45 p.m., with Colonel C. R. Evans, D.S.O., in the chair. Tickets, price 17s. 6d. (exclusive of wines), may be obtained from Major H. M. Perry, or Dr. H. L. Tidy, 39, Devonshire Place, W.

The third annual dinner of the 19th Casualty Clearing Station will take place in London on Friday, November 25th. Sir Henry Gray, K.B.E., C.B., C.M.G., will be present. Further particulars may be obtained from the dinner secretary, the Rev. E. C. Doddrell, 6, Alexandra House, Regent's Park Road, Finchley, N.3.

Colonel R. C. Macwatt, C.I.E., F.R.C.S., Indian Medical Service, has been appointed an honorary surgeon to the King, vice Colonel C. R. M. Green (ret.).

Medical News.

We have read with regret Reuter's telegram stating that Sir Andrew Macphail was shot and seriously wounded in his house in Montreal by a person named Ogulnik, who afterwards killed himself. Sir Andrew Macphail has been Professor of the History of Medicine in McGill since 1907; he was long editor of the *University Magazine* and the writer, among other works, of the biography of Dr. John McCrae, author of In Flanders Fields, to which we referred last week. Sir Andrew Macphail served with the Canadian Contingent throughout the war, and was at Vimy; of his experiences there he gave some account in the Cavendish Lecture—"A Day's Work"—delivered at the West London Medico-Chirurgical Society in 1917. Afterwards he was with the Canadian Headquarters Staff in London, and there added to his many friends. We are glad to read that Sir Andrew Macphail is expected to recover.

The Fellowship of Medicine and Post-Graduate Medical Association, with the co-operation of various special hospitals, is arranging to hold a series of special courses in general and special subjects during the forthcoming year. The first of these—a six weeks' post-graduate course in general medicine—will be held from January 9th to February 18th, 1922. The course will consist of a morning and an afternoon session, and the ground covered will include pulmonary affections, heart disease, disease of the nervous system, fevers, and lunacy; the programme will be so arranged as to entail a minimum amount of travelling each day. The numbers attending the course will be limited, and early application for further particulars as to syllabus, fees, etc., should be made to the Secretary to the Fellowship, 1, Wimpole Street, W.1.

The Committee of the Universities' Library for Central Europe, formed to renew the stocks of books and scientific and learned periodicals in the universities of Central Europe, has recently issued its report for its first year of working, ending March 31st, 1921. It has sent consignments of literature to Austria, Czecho-Slovakia, Esthonia, Germany, Hungary, and Poland. Donations of money and of English books published since 1914 are still urgently needed, and may be sent to the Honorary Secretary, Mr. B. M. Headicar, London School of Economics, Clare Market, W.C.2.

An Emeritus lecture will be delivered at the Middlesex Hospital Medical School on Tuesday, February 7th, at 3 p.m., by Sir John Bland-Sutton, LL.D., F.R.C.S., on "The choroid plexuses of the brain and psammomas."

The sixty-second annual meeting of the Dutch Dermatological Society was held at Amsterdam on October 29th and 30th.

In September 1,110 fatal cases of plague occurred in Java, as compared with 928 in August and 439 in July.

The Glasgow University Club, London, will hold its annual autumn dinner on Friday, November 25th, at 7.30 p.m., in the Holborn Restaurant, with Professor J. Millar Thomson, F.R.S., in the chair.

In the week ending September 24th 69 cases of anterior poliomyelitis were notified in New York City, the largest number since the great epidemic of 1916.

The annual dinner of the Medical Society of University College Hospital will be held on Monday, December 12th, at Frascati's Restaurant, at 7.15 for 7.30 p.m. Tickets, price 10s., may be obtained from the Secretary or the R.M.O.

The next meeting of the Hunterian Society will be held on Wednesday, November 23rd, at the Sion College, Embankment, E.C. (close to Blackfriars Bridge), at 9 p.m., when Mr. H. D. Gillies will read a paper on "Plastic surgery of the face." All members of the profession are invited.

The next quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will take place on Tuesday, November 22nd, at 11, Chandos Street, Cavendish Square, W., under the presidency of Dr. C. Hubert Bond, at 3.15 p.m. Papers will be read by Dr. M. Hamblin Smith, Medical Officer H.M. Prison, Birmingham, on "The medical examination of delinquents," and by Dr. H. Davies Jones, Ashhurst Hospital, Littlemore, on "Forgetting."

Dr. Donald W. C. Hood, C.V.O., has been appointed Honorary Consulting Physician to the Royal Earlswood Institution for Mental Defectives, in succession to the late Sir George H. Savage, who was associated with Earlswood for over twenty years.

A MONUMENT has been erected at Havana to Charles Finlay, who discovered the part played by the stegomyia in yellow fever.

DURING the first half of 1920, 225 children committed suicide in the United States, and about twice as many in the first half of 1921, anxiety about school examinations being assigned as the chief cause.

THE next congress of the Royal Sanitary Institute will be held at Bournemouth from July 24th to 29th, 1922.

PRESIDENT HARDING has appointed Dr. J. G. South of Frankfort, Kentucky, a former president of the Kentucky State Medical Association, Minister to the Republic of Panama.

ALDERMAN DR. A. J. RICE-OXLEY, C.B.E., J.P., has been unanimously elected Mayor of the Royal Borough of Kensington for the third time, and Dr. Henry Jackson has been elected Mayor of Wandsworth. The names of the following medical men have been noted among the list of newly-appointed Mayors of provincial towns: Dr. E. J. Byrd (Pudsey), Dr. H. O. Grenfell (Saltash), Dr. O. W. Griffith (Pwllheli), Dr. H. Tibbits (Warwick), Dr. H. S. Walker (Louth).

THE resignation of the Cabinet in Czecho-Slovakia has caused a change in the Ministry of Health, to which post Dr. B. Vrbensky has been appointed; the new Minister is a dentist by profession, but he holds a medical qualification, as appears to be usual in Czecho-Slovakia. In politics he is a Socialist.

A DANCE in aid of Westminster Hospital and School will be held at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, on Friday, December 2nd.

STRONG protests have been made by the medical profession in France, and especially by the Syndicat général des médecins français électro-radiologistes, against the appointment by the prefect of the department of the Seine of a radiographer who is not a qualified medical practitioner to be director of the radiological laboratory of the Salpêtrière Hospital in succession to the late Dr. Charles Infroit.

IT was decided at a recent meeting of the British Spa Federation that in future the spas composing the federation will require all patients to have medical prescriptions, dated not more than twelve months previously, for all treatments except a few generally recognized to be obtainable at any "hydro" or treatment establishment.

THE annual general meeting of the Medical Officers of Schools Association will be held at 11, Chandos Street, Cavendish Square, W.1, on Tuesday, November 29th, at 5 p.m. An address by the President, Mr. R. C. Elmslie, M.S., F.R.C.S., on the "Status of physical instructors in schools," will be followed by a discussion.

WE are asked to state that the speakers in the discussion on a paper on syphilis of the stomach, to be read as an occasional lecture by Dr. Gustave Monod at a meeting of the Royal Society of Medicine on Wednesday, November 23rd, at 5 p.m., will be Dr. A. F. Hurst, Dr. J. W. McNee, Mr. Herbert Paterson, Mr. A. J. Walton, and that Sir Berkeley Moynihan, Dr. Charles Bolton, and Mr. Sherren, whose names were mentioned last week, will not be able to be present.

A. R. LING and D. R. NANJI contributed to the Royal Society on November 10th a note on the longevity of certain species of yeast. Eight cultures of yeast prepared in 1887 by the late Professor Hansen were found to be still living. In what form they have retained their vitality has not yet been determined. Hansen showed that one species at least, *A. apiculatus*, found on the exterior of certain fruits, hibernates in the soil; and as this species, or at all events the yeast with which Hansen worked, does not form endospores, it may be that the yeasts now described have been preserved as resting cells.

THE American Red Cross Child Health Exhibition, covering practically every department of child welfare, which has been touring a number of the large cities of France since May, closed its year's work in October at Valenciennes. Besides spending a month in Paris this exhibition remained for from two to three weeks at Lille and other cities of North-Eastern France, and has been very successful, the average attendance at the exhibition being about 5,000 persons daily. The exhibition received unanimous support from the French medical profession in every city which it visited, and the local medical practitioners gave their services to it freely in the work of lectures, consultations, examination of babies, etc. It is expected that the exhibition will be continued next summer under the management of the French child welfare organizations.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"VICTORIAN" has an income of £800 a year from property and investments in Australia. What would be his liability if he came to this country for one or two years?

*** He would be liable to account for tax on his income as measured by the amount of the remittances from Australia. In calculating the tax payable, the usual allowances—for example, £225 free and £225 at 3s.—would be made, and an allowance is also made for the tax paid in Australia.

A. McD." uses his private car for travelling from the place of his real employment to the hospital, where he holds an honorary appointment.

*** We understand that the Board of Inland Revenue offers no objection to the inclusion of honoraria from hospital appointments with the main source of earnings and to the calculation of expenses accordingly. We therefore think that our correspondent may properly deduct his expenses. His colleague, who travels to another place to perform duties in connexion with a Pension Board, appears to be in a somewhat different position.

"REPAY" inquires whether he is correctly informed that army pay must be dealt with on the basis of the actual year's pay and not on the three years' average.

*** Yes; on the other hand, a practitioner on active service can have the assessment on the practice profits dealt with on the current year's basis also. If the total income on that basis be less than the allowances due, the difference cannot be carried forward against the income of the next year.

"MAJOR I.M.S." landed in England from India on June 13th, 1921; he receives privilege pay to October 6th and furlough pay from that date to March 31st, 1922. He asks what income he is liable to declare.

*** Our correspondent should make his declaration as "a person not ordinarily resident in the United Kingdom." On this basis his income should be dealt with as follows:

1. Pay: The amount receivable for the period June 13th, 1921, to March 31st, 1922.
2. Private practice, etc., in India: Presumably at present in abeyance, if so *nil*; if any earnings in this country they are liable to tax.
3. Interest on Indian shares: Income liable if remitted to this country, less an allowance for tax borne there.
4. Five Per Cent. War Loan interest: Not liable to assessment in the circumstances of residence.

LETTERS, NOTES, ETC.

PAST AND PRESENT.

DR. W. E. HOME writes with reference to the recommendation (in the note headed "Past and Present" on p. 715 of our issue of October 29th) to read certain books by Professor Shield Nicholson and others: As an Edinburgh student and secretary of the Conservative Association years ago may I recommend instead *The Strength of Nations* (not the "wealth") by J. W. Welsford (Longmans, 6s.) published in 1907, which has explained to me everything that has happened since, the suffragettes and the unemployed, and foretold the great war?

Birth Control.

Dr. Marie C. Stopes (President, Society for Constructive Birth Control and Racial Progress, 61, Marlborough Road, Holloway, N.19) wr tes, in the course of a letter on this subject: Dr. Martindale is reported in your pages to have given an address to medical women in which she pointed out that the birth control movement in England dated from the Bradlaugh trial in 1877. Had she attended the presidential address of the Society for Constructive Birth Control she would have learned that there was a very flourishing movement, centring round Dr. Trall in 1866, years before Bradlaugh touched the subject, and also a considerable movement earlier than that. This point is important, as "birth control" has hitherto (erroneously) been much prejudiced in popular opinion by being supposed to be an atheistical movement originated by Bradlaugh. Furthermore, dealing with the methods used by the wife she includes the "introduction of rubber cap" as one and dismisses it as being "not entirely satisfactory." With not only enormous numbers of private confidences from individuals for years past, but also with eight months' experience of running the only clinic for birth control, I may claim to know something of methods. There is not one, but there are nearly two dozen different varieties of "cap," and we have found from experience that all, save one, are unsatisfactory, and that one type of cap is entirely satisfactory for normal people when intelligently used. The great difficulty, of course, in contraceptive methods is the problem of the woman with a displaced uterus. Such cases, and those of persons diseased in other ways, require special attention and methods, and I hope that medical women will concentrate on the various problems raised by such, after ascertaining accurately what is already known of the subject.

The late Dr. Wickham Legg.

Dr. E. H. Ezard (Cambridge) writes to point out an error in the obituary of Dr. Wickham Legg. By inadvertence it was stated that Dr. Legg's editions of the Quignon Missal and the Sarum Missal were made for the Henry Bradshaw Society. It should have been stated that the former was published at the Cambridge University Press before the society came into existence, and that the Sarum Missal was edited for the Clarendon Press, Oxford. Dr. Ezard sends us a list of Dr. Legg's principal contributions to the Henry Bradshaw Society, for which we have not space; he also mentions that in 1917 Dr. Legg presented to the members a facsimile of the Bobbio Missal, consisting of some 300 pages of phototypes.

The Term "Neurasthenia."

Dr. R. M. Ladell (Wylde Green, Birmingham), in the course of a letter on the subject, writes: It appears to me that the discussion on the neurasthenic element in midwifery and gynaecology, reported in your issue for October 29th, was robbed of much of its value by the looseness with which the terms "neurasthenia" and "neurosis" were used. One would hesitate to criticize on the strength of what is not perhaps a full report, were it not that one of the speakers, Dr. Helen Boyle, confessed herself as feeling "in a maze" owing to this very point. Surely it is time that the habit of using the term neurasthenia to cover every conceivable manifestation of functional nervous disorder should be abandoned. Neurologists now restrict the meaning to a definite syndrome comprising cranial headache, disordered sleep, chronic fatigue, and irritability. As such neurasthenia is recognized to have a very definite etiology, and it seems strange that the majority of the speakers showed themselves to be quite out of touch with modern research. Many of the conditions described should have been classed as conversion hysteria, and some obviously belonged to the anxiety neuroses. It is painful to read of gynaecologists still pinning their faith to operation for such a purely psychic condition as is dyspareunia in the absence of gross mechanical cause. There must be special departments and specialists in the increasing complexity of medicine, but it is not good that the specialist should work in a water-tight department. Dr. Farquhar Buzzard's valuable contribution recognized this, but even he did not give the strong lead one would expect.

Nursing in Prison Hospitals.

In our issue of November 5th, p. 763, we published a reply by the Home Secretary to a question in the House of Commons as to the recent appointment of an untrained nurse to take charge of the hospital at Holloway Prison. Mr. Shortt stated that the person appointed had been engaged in hospital duties for seventeen years. With reference to this matter Mrs. Scharlieb writes to us as follows:

The Voluntary Nursing Advisory Board for Holloway Gaol went to the Prison Commissioners' Office on November 7th, and were most kindly received by Mr. Waller. Drs. Dyer, Griffiths, and Mr. Wall (Secretary), were also present. After considerable discussion the following points were agreed on:

The Holloway Hospital is to be staffed entirely by certificated nurses, reasonable time being allowed for the absorption of the existing officers where not certificated. In this way it is hoped that all difficulties may be overcome, and that the matron, with the assistance of a trained and certificated staff, may be in a position to secure the good nursing of the patients confided to her care.

The Voluntary Nursing Advisory Board expressed their appreciation of the good services rendered by the unqualified officers who have prison training only. They announced their intention of sending a special message of thanks to one of these ladies who is likely to be taking up work elsewhere.

Degrees and Diplomas.

"M.R.C.S., L.R.C.P." writes: May I suggest to "Triple Qualification" that the idea that the colleges should have the right to confer degrees instead of diplomas is not one likely to cut much ice. The colleges have not the least intention of stirring a little finger to alter the anomalous position of their diplomates, who spend their life doctoring without being entitled to call themselves doctors. The M.B. in general practice has a good opportunity to take the M.D. with a reasonable amount of reading. But do the colleges offer any opportunity to the general practitioner to become an M.R.C.P.? A glance at their regulations shows that they are very carefully designed to prevent any such contingency. Most men who enter the blind sac of the diploma and licentiate course do so in ignorance of the disability entailed, and it seems to me that the only thing that can be done is to bring home to them by some means what they are doing before it is too late. I notice that many of my neighbours who are not in possession of a degree nevertheless adopt the style of "Dr." on their plates and visiting cards. I never had sufficient "nerve" myself, but I long since gave up asking to be addressed as "Mr." Explanations are troublesome things, but I always feel guilty of some slight deception even after fifteen years of practice.

"An Old Guy's Man" writes: I cannot agree with your correspondents "Triple Qual." and "Conjoint," who seem to think that those with university degrees get the best posts. In London, I am certain that provincial degrees are at a discount—at least they were so in the eighties, a time when the unqualified assistant flourished. I left hospital in 1884, not in a very good state of health. I answered an advertisement for an assistant in Kensington, and got it, though my principal some time afterwards informed me that he had received answers from over forty applicants, a great many with the M.B. or M.D. of provincial universities; somehow, being a London college man himself, he preferred the home-made article, and I got the post with a single London qualification. I afterwards joined an old doctor from my own school in a first-class practice in the provinces, as my health did not permit me to reside in London.

Electrical Apparatus.

We have received from Watson and Sons (Electro-Medical), Ltd., of Sunic House, Kingsway, copies of their latest "bulletins" containing particulars of their electro-medical apparatus. The principal new introduction is a portable diathermy apparatus, which can be taken to a patient's house. Practically all forms of alternating current supply can be connected to the machine, and when only direct current is available a separate rotary converter is supplied. The apparatus in its cabinet, apart from the rotary converter, weighs only 26 lb.

X-Rays, Limited, of 11, Torrington Place, London, W.C., have sent us their latest price lists, which show some reductions in the prices of the materials used in radiography. Certain *x*-ray plates and films appear to have come down considerably in cost, and the reduction is even more marked in the case of intensifying screens. *X*-Rays, Limited, have lately introduced a new transformer, designed to give 200,000 volts, and to operate the new model of Coolidge tube for deeply penetrating *x*-ray treatment.

Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, 35, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 32, 33, and 34.

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